GROWTH PATTERNS IN NIH EXTRAMURAL PROGRAMS

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I. Introduction

The federal grant-in-aid for research and development is accepted today as a mechanism for the support of government sponsored projects. The National Institutes of Health, one of three Bureaus of the Public Health Service, has utilized this arrangement in expediting its extramural programs. This undertaking reached a total outlay exceeding $800 million in fiscal year 1964. Their magnitude reflects the growing concern of citizens of the United States over serious health hazards and disease, and faith in the NIH as a spearhead in research for the amelioration of such human problems.

During the 1950's, it was the responsibility of NIH to implement a series of laws-some dating back to 1930-each of which promoted a portion of the Nation's research and training effort in problems of health or disease, including related research in the biological, behavioral, and physical sciences. Among these were:[1,2]

-- in 1947, establishment of the Division of Research Grants, NIH which took over the wartime Office of Scientific Research and Development grants, and was empowered to process NIH grants and fellowships to non-Federal institutions and scientists;

-- in 1948, authorization of several National Institutes to support research and training (Heart, Dental, and Microbiological which became the National Institute of Allergy and Infectious Diseases in 1955), in addition to National Cancer Institute authorized in 1937 and National Institute of Mental Health authorized in 1946;

-- in 1950, two more National Institutes: Arthritis and Metabolic Diseases, and Neurological Diseases and Blindness;

-- in 1956, provision for grants-in-aid to non-Federal and nonprofit institutions for constructing and equipping research facilities in health related sciences (an appropriation for the first cancer construction grants was approved in 1948).

In retrospect, these years at NIH were characterized by a personal sort of approach. It was also a time when administrators of the NIH extramural programs looked upon their mission as a modest one. They focused their attention upon research and training as related to specific disease entities, and on freedom of the principal investigator in the conduct of his research or training project.

With the advent of the prosperous sixties, sociological changes brought about by a fast-moving technological era, aggravated old health problems and created new ones. The Public Health Service adjusted its programs accordingly. One aspect of this adjustment was recognition of need for large-scale projects within the fields of environmental and community health. Following precedent of air pollution grants first authorized in 1955, and water pollution, 1956, arrangements were made for funding grants in many areas under the Bureau of State Services' Division of Environmental Health and Division of Community Health. Already existing grants funded by NIH were transferred to BSS, and new grants within these areas were delegated to BSS.

NIH enlarged its concepts beyond those of the seven Institutes already established, each relating to a field of categorical research. It promoted noncategorical research, taking action to broaden its scope, by:

-- in 1962, creation of a Division of Research Facilities and Resources to formulate plans, policies, and procedures for the grant programs of NIH which provide resources and facilities for the over-all program of institutions conducting such research;

-- in 1963, establishment of the National Institute of Child Health and Human Development, and the National Institute of General Medical Sciences (first introduced on a Division level in 1955).

Although not entirely new to NIH policy, the sixties saw the implementation of a broad project design of research grant awards which were institution-wide rather than principal investigator oriented. In this, the research grant policy was following procedure inherent to the NIH training grant program and the matching grant program for construction of health research facilities.

In fiscal year 1960, Congress appropriated funds for a new General Clinical Research Centers Program.[3] NIH allotted $3, $8, $27, $33.5, and $27.2 million to this program in the years 1960 through 1964. Grants are awarded

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1 The National Institutes of Health Organization Handbook, September 1964. U.S. Govt. Print. Off., Washington, D.C., 1964.

2 The Public Health Service Act and Amendments; The Federal Water Pollution Control Act. U.S. Govt. Print. Off., Washington, D.C., April 1957.

3 Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives. Department Health, Education, and Welfare. Part 3. National Institutes of Health. 88th Cong., 1st Sess. U.S. Govt. Print. Off., Washington, D.C., 1963, pp. 172, 201.

medical schools, research hospitals or other appropriate medical institutions which have resources for carrying out, in connection with human patients, well designed studies in any preclinical or clinical science. In hospitals where these centers are situated, scientists from many departments correlate their laboratory studies with rigidly controlled clinical observations and analyses.

An amendment was also made to the Public Health Service Act providing basic authority for General Research Support awards to institutions. The program was started in calendar year 1962 with $20 million appropriated for NIH; in 1963, with $30 million, and $35 million in 1964. Grants at first were made only to schools of medicine, dentistry, osteopathy and public health. The program has been extended to schools of pharmacy, nursing, veterinary medicine, hospitals, and other nonprofit research organizations heavily engaged in health oriented research. "Each General Research Support grant is computed according to a formula whose factors depend in large measure upon the total health related research expenditure of the applicant institution in its latest complete fiscal year; the amount of federal and nonfederal grants, contracts or gifts it received; and the total amount of available NIH funds for research and research training. (To ensure a minimum financial base for extending its research and research training program, each eligible educational institution receives a predetermined basic amount.)" [1]

The NIH Study Committee chaired by Dr. Dean E. Wooldridge points to these and other "special" NIH programs, in contrast to the "traditional" research grant program, as designed to meet special needs. Such programs include training grants, several types of salary awards (to expand the supply of people competent in biomedical research); facilities grants to provide research space and equipment; and primate centers, and other special resource centers. After mentioning that such programs account for more than one-third of the total NIH budget, the Committee states: [2]

> "From an administrative viewpoint the special programs are quite unlike the traditional small research grants. They are initiated centrally, on recognition by NIH of some area of deficiency in the total program. The study section apparatus is only marginally useful in recommending how available funds should be distributed among them; Advisory Councils, appropriately, have a strong role. They involve the institutions heavily and explicitly. Most significantly, perhaps, they do not typically contain an automatically identifiable person, analogous to the principal investigator on a traditional research grant, whose continuing primary interest is to make the project succeed. The special programs obviously call for planning, scheduling, organization, management and control, all of a centralized sort that would be inappropriate for the research grant programs."

NIH growth patterns during the sixties will be greatly influenced by the thrust of these special programs. They will also be shaped by the government's total research and development expenditures. Though more than four-fifths of such funds are attributable to National Aeronautics and Space Administration, Department of Defense, and Atomic Energy Commission needs, the NIH occupies a pivotal position with respect to allocation of health related research awards.

One of the earliest reports to focus attention upon the role of NIH in the Nation's entire research and development expenditure pattern was the President's Science Advisory Committee Report Number One of December 1962, submitted by the President to Congress early in 1963. [3] Other recent reports emanating from this group, and those of various Senate and House Committees, the National Science Foundation, the National Academy of Sciences, and the Committee on Utilization of Scientific and Engineering Manpower bring the mission of NIH into perspective within the framework of the Nation's entire scientific research and teaching needs.

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This volume summarizes the findings of various analytic studies pertaining to growth patterns of NIH extramural programs. Some of the studies were experimental in nature and have not been repeated during recent fiscal years, but they are indicative of queries with respect to the programs as they have enlarged over the past decade. It is believed the material will be of interest to those who have followed the NIH extramural program as it has unfolded, and that it will contribute to future analysis of the programs.

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1 Serving Health Research. PHS Publication No. 1047. U.S. Govt. Print. Off., Washington, D.C., September 1963, p.7.

2 A Report of the President's NIH Study Committee. Biomedical Science and Its Administration. A Study of the National Institutes of Health. The White House. Washington, D.C., February 1965, p. 109.

3 A Report of the President's Science Advisory Committee. Meeting Manpower Needs in Science and Technology. Report Number One: Graduate Training in Engineering, Mathematics, and Physical Sciences. The White House. Washington, D.C., December 1962.

II EVOLUTION OF THE VARIOUS NIH PROGRAMS

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II Evolution of The Various Programs

For many years, NIH has conducted six major extramural programs, each with its own award pattern: research grants; training grants; health research facilities (construction); career development awards (fellowships, traineeships, research career and development awards); contractual arrangements; and health services formula grants to States.

(a) Award Trends

Growth in number of NIH awards from one fiscal year to the next has been impressive, as illustrated for the period 1954-1964 in table 1 and figure 1. Rise in dollars funded under each NIH program for the same period is shown in table 2 and figure 2.

Table 1
Number of Awards[1/], by NIH Extramural Program
United States and Foreign. Fiscal Years 1954 - 1964

NIH extramural program	Number of awards						
	1954	1959	1960	1961	1962	1963	1964
Total	4,699	14,732	18,995	22,132	23,267	25,376	26,018
Research grants	2,923	9,056	11,571	13,534	14,975	15,973	16,020
Training grants	565	1,934	2,626	3,586	3,697	4,114	4,346
Health research facilities grants	0	205	171	149	112	178	129
Fellowships/Traineeships	1,163	3,166	4,287	4,498	4,010	4,561	4,872
Research contracts	2/	321	286	311	419	496	597
Health services formula grants	48*	50*	54*	54*	54*	54*	54*

1/ Supplemental grants included in count of grants.
2/ Not known.
* Estimated. Excludes data for grants funded by NCI and NIH now transferred to BSS.

Research grant awards comprise the largest sector of the NIH extramural total, accounting for 61 percent of single awards and 62 percent of dollars funded in fiscal year 1964. The training grant program is second in size, amounting to some 17 percent of awards and 20 percent of funds that year. Although the rate of growth of training grant awards resembled that of research grant awards for many years, it has accelerated since fiscal year 1961.

AVERAGE SIZE OF NIH AWARD

When viewed in terms of average size of grant, that for health research facilities (construction) has consistently shown the highest value, $417,833 in fiscal year 1964. Second has been the health services formula grant, with an average amount of $202,778 in 1964. Each of these programs is limited to the United States and is operated on a matching fund basis. Research grants and training grants which are not matched by outside sources have a far wider range in size than do the matching grants, but are also smaller on the average: research grants, $31,081,and training grants, $38,175,in fiscal year 1964. Traineeships, also fellowships and career awards (each to an individual scientist) averaged $9,127 in fiscal year 1964.

MOST GRANTS ARE MADE TO DOMESTIC INSTITUTIONS

NIH program awards are mainly conducted in the U.S., with only 5 percent of total awards accounting for 2 percent of total funds directed to foreign grantees. During fiscal year 1964, close to six percent of research grant awards and of fellowship/traineeship awards originated abroad as did two percent of health research contracts and an infinitesimal part of training grants. These accounted for 2.6 percent of research grant funds, 5.4 percent of fellowship/traineeship funds, 1 percent of research contract funds, and a small amount of training grant money. (appendix table 1)

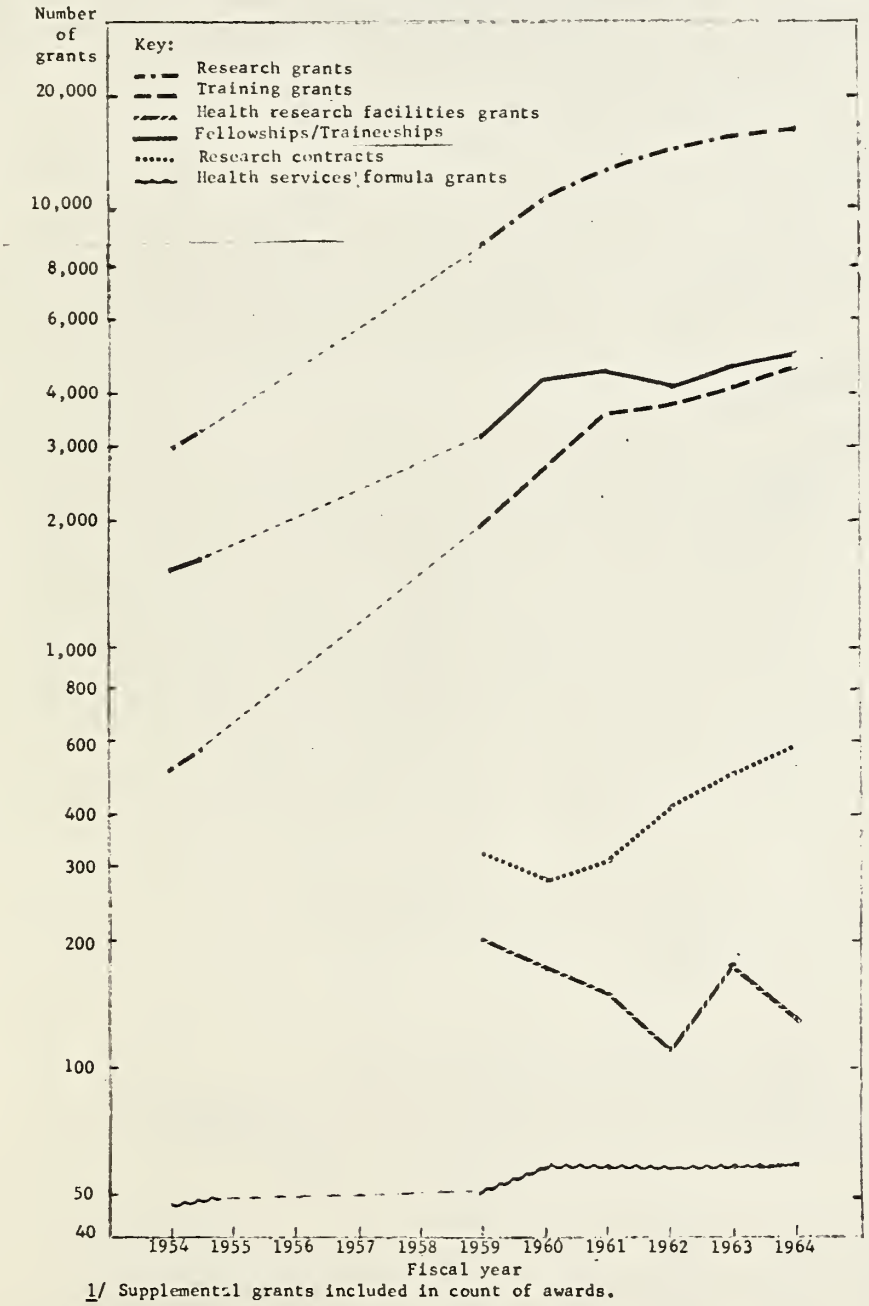
BOTH PUBLIC AND PRIVATE INSTITUTIONS ARE GRANTEES

Since 1954 there has been a gradual increase in the proportion of NIH funds awarded to public institutions, a gradual decrease in the proportion to private institutions. Speaking only of the U.S. and possessions, this ratio was 42.1, public, and 57.9,private, for the four main extramural programs combined (research, construction, training, and fellowships/traineeships) in fiscal year 1954. By fiscal year 1962 it had become 45.4, public and 54.6 private, with the research grant and training grant distribution heavily influencing that for all four programs. Viewed alone, construction funds showed a slight tendency towards higher proportionate amount to public institutions, but fellowships/traineeships funds leaned somewhat in favor of training at privately controlled institutions. (appendix table 2)

TYPE OF GRANTEE INSTITUTION

Institutions of higher education comprise the largest sector of NIH extramural award recipients, accounting for some 80 percent of grants and of funds over the years. If sponsoring institutions are classified into broad groupings, the second largest sector is that of hospitals which receive some 10 percent of grants and funds. State and local governmental authorities are the third group of grantees which can readily be delineated, receiving less than 3 percent of awards and dollars. A final group, termed "research institute and other" is comprised of the many private nonprofit research institutes and laboratories, professional organizations and association, foundations and similar societies which apply for and receive NIH extramural funds under one program or another.

Figure 1
NUMBER OF AWARDS[1/], BY NIH EXTRAMURAL PROGRAM
UNITED STATES AND FOREIGN, FISCAL YEARS 1954 - 1964



1/ Supplemental grants included in count of awards.

Figure 2
FUNDS AWARDED, BY NIH EXTRAMURAL PROGRAM
UNITED STATES AND FOREIGN. FISCAL YEARS 1954 - 1964

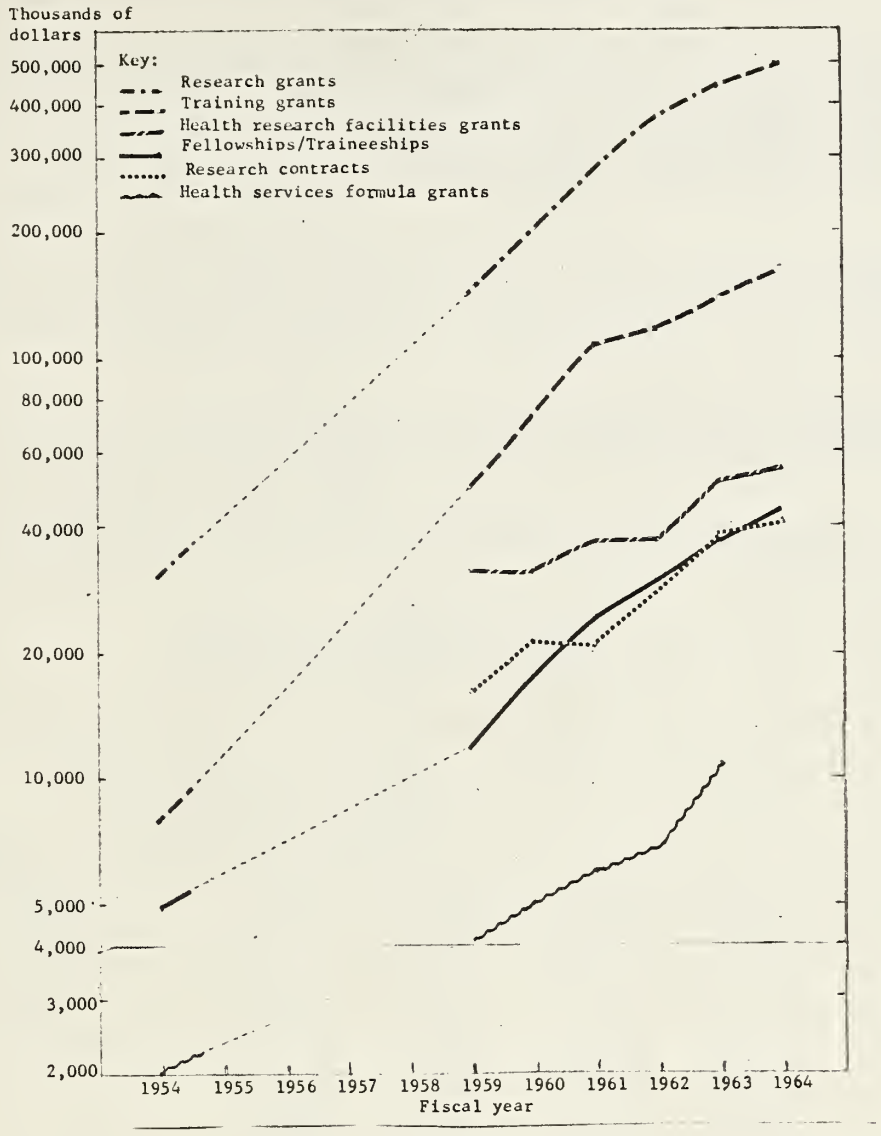


Table 2
Funds Awarded, by NIH Extramural Program
United States and Foreign. Fiscal Years 1954 - 1964

NIH extramural program	Funds (in thousands of dollars)						
	1954	1959	1960	1961	1962	1963	1964
Total	$46,065	$255,185	$349,284	$472,491	$589,235	$710,108	$815,829
Research grants	30,827	141,416	198,758	272,941	372,099	430,908	497,924
Training grants	9,813	48,914	73,744	108,378	115,857	140,639	165,908
Health research facilities grants	0	31,572	30,786	37,990	36,760	51,309	53,901
Fellowships/Traineeships	3,100	12,071	17,891	24,318	29,599	37,955	44,469
Research contracts	1/	17,212	23,105	22,864	28,170	38,347	42,677
Health services formula grants	2,325*	4,000	5,000	6,000	6,750	10,950	10,950

1/ Not known.
* Estimated. Excludes data for grants funded by NCI and NHI now transferred to BSS.

(b) Research Grant Awards (number and size)

In keeping with Division of Research Grant policies and procedures, an application for a PHS research grant (whether NIH or otherwise) is forwarded to DRG by the principal investigator who also names the institution sponsoring his proposal. A recommendation is made by the appropriate review body with respect to this proposal. In the case of a recommendation for approval, this finding includes a score indicating level of priority as well as a statement of financial support-- subject to National Advisory Council approval, that of the Surgeon General of the Public Health Service together with sufficient Congressional appropriation. Payment may begin the first of any month. More than five times the number of NIH research grants were awarded in fiscal year 1964 as compared with fiscal year 1954.

INSTITUTION SPONSORING THE PRINCIPAL INVESTIGATOR

Detailed tabulations through fiscal year 1962 show that about four-fifths of research grants were awarded to principal investigators sponsored by institutions of higher education; one-tenth to scientists or physicians at hospitals which are independent of medical school ownership; and the remainder to individuals sponsored by research institutes or laboratories, voluntary health and health related organizations and associations, foundations, as well as to state or local health departments. (appendix table 3)

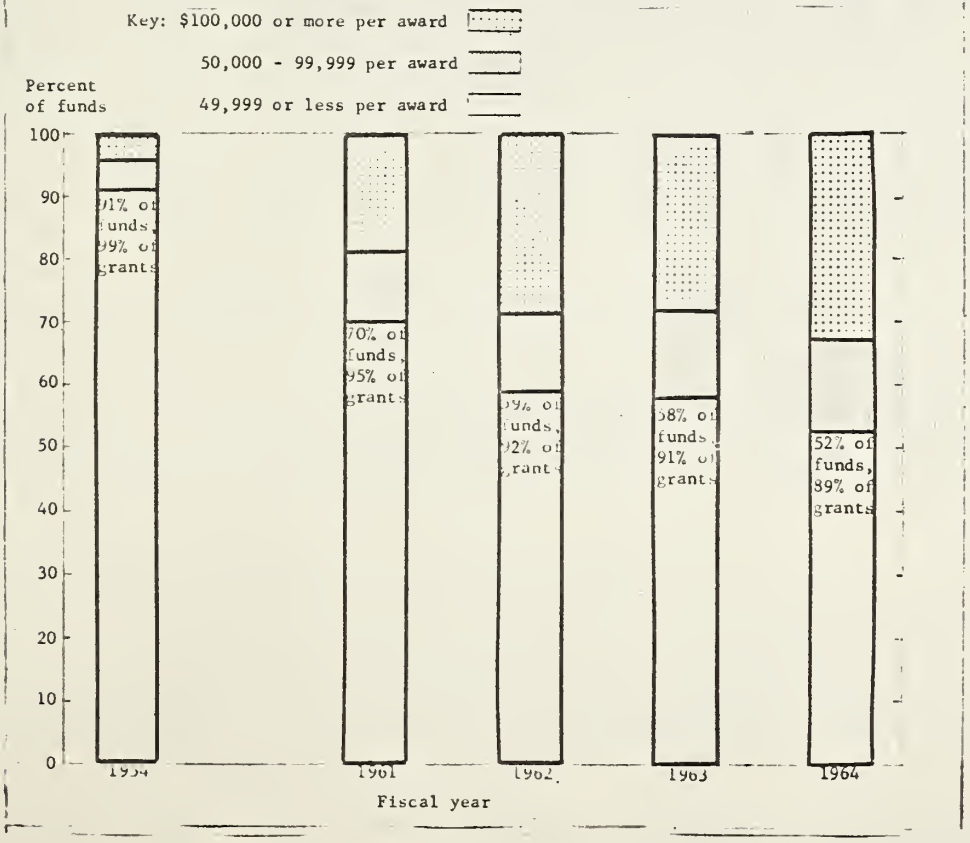
FUNDS AWARDED

Dollars disbursed under the research grant program increased 15-fold during fiscal years 1954-1964. Although funds to universities and colleges have regularly exceeded three-fourths of the total, large grants have not been limited to principal investigators sponsored by academic centers. Scientists at nonprofit research institutes and laboratories, at certain hospitals, and at state or local health departments are recipients of some of the largest NIH research grant awards.

The average size of NIH research grant awarded to principal investigators in the United States and possessions has risen from $10,550 in fiscal year 1954 to $32,146 in 1964; that to scientists abroad, from $9,888 to $13,851. (appendix table 4)

Figure 3

PROPORTION OF NIH RESEARCH GRANT FUNDS
ALLOCATED TO THREE CATEGORIES OF AWARD SIZE
FISCAL YEARS 1954 and 1961 - 1964



AWARDS ARE INCREASING IN SIZE

The pattern in distribution of awards within various size groupings over the years is of interest. Table 3 shows this for each NIH Institute or Division. With overall expansion of the program there has been a greater proportion of grants in the amount of $20,000 - 49,999, together with a smaller proportion in the amount of under $20,000. It also shows a gradual increase in proportion of grants of $50,000 or more. Figure 3 shows the manner in which such changes have affected the distribution of NIH research grant funds according to amount awarded. Successive fiscal years 1954-1962 evidenced marked proportionate increase in funds disbursed for awards in the amount of $100,000 and over. The situation stabilized somewhat during fiscal years 1963 and 1964. (appendix tables 5,6,7)

Table 3 1/

Distribution of NIH Research Grants Awarded to Each Institute/Division, by Size of Grant
United States and Foreign. Fiscal Years 1954 and 1962-1964.

Size of research grant	All Institutes	Research grants, by Institute										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
						Fiscal Year 1964						
Grants	16,020	1,525	2,950	855	1,725	402	2,030	2,479	1,849	1,726	400	79
Percent	100	100	100	100	100	100	100	100	100	100	100	100
Under $20,000	56	60	58	59	53	65	61	54	52	56	4	100
20,000 - 49,999	33	34	35	34	35	31	32	35	30	36	21	0
50,000 - 99,999	7	5	5	5	8	2	5	7	14	5	19	0
100,000 or more	4	1	2	2	4	2	2	4	4	3	56	0
						Fiscal Year 1963						
Grants	15,973	1,784	2,978	0	1,869	474	2,306	2,579	1,940	1,691	352	0
Percent	100	100	100	0	100	100	100	100	100	100	100	0
Under $20,000	62	66	64	0	57	73	66	61	60	62	10	0
20,000 - 49,999	29	17	31	0	32	22	27	31	28	32	26	0
50,000 - 99,000	6	16	4	0	8	3	5	5	10	4	21	0
100,000 or more	3	1	1	0	3	2	2	3	2	2	43	0
						Fiscal Year 1962						
Grants	14,975	1,803	2,754	0	1,914	411	2,127	2,603	1,712	1,498	153	0
Percent	100	100	100	0	100	100	100	100	100	100	100	0
Under $20,000	67	72	70	0	63	81	69	67	63	66	0	0
20,000 - 49,999	25	24	26	0	29	17	21	26	27	28	35	0
50,000 - 99,999	5	3	3	0	6	1	5	5	8	4	16	0
100,000 or more	3	1	1	0	2	1	5	2	2	2	49	0
						Fiscal Year 1954						
Grants	2,923	303	395	0	745	35	342	611	180	312	0	0
Percent	100	100	100	0	100	100	100	100	100	100	0	0
Under $20,000	91	92	96	0	90	100	95	89	78	92	0	0
20,000 - 49,999	8	7	4	0	9	0	5	9	20	8	0	0
50,000 - 99,999	1	1	0.0	0	1	0	0.0	1	2	0	0	0
100,000 or more	0.0	0	0	0	0.0	0	0.0	1	0	0	0	0

1/ Supplemental grants included in count of grants. Includes field investigation awards.

SMALL GRANT PROGRAM

A special program for grants of an exploratory nature, each limited to a single year and not renewable, was in effect from March 1956 to July 1959. Each award was to be no larger than $2,000 (plus indirect costs), with the understanding that a young or inexperienced investigator might have an opportunity to undertake simple experimentation before completing an application for a more elaborate research proposal. This program has been terminated by all Institutes except Mental Health which continues to make such awards with a top value of $3,500 per grant (or $4,200 with indirect costs). In fiscal year 1963 NIMH awarded 243 grants amounting to $892,857; in 1964, 229 amounting to $869,343.

LARGE GRANT PROGRAMS

Many research grant awards involving large annual expenditures today are institution oriented, and are awarded after review by a special committee rather than a study section.

The Division of Research Facilities and Resources created in 1962 is largely responsible for noncategorical research awards to eligible institutions. An objective is to promote basic services which are too diverse or too large to fit into the established mechanism for earlier research grant procedures. In fiscal year 1963, DRFR approved $30 million for 264 General Research Support grants to institutions which are eligible by virtue of their teaching and research mission, total research activity and complexity of research program. It also approved more than $17 million in grants towards General Clinical Research Center support. Each Center is a discrete unit within a hospital through which studies on a variety of human diseases over a wide range of basic clinical scientific problems may be pursued.

Six of the Institutes supported similar Clinical Research Centers in 1963, accounting for more than $10 million in approved grant funds. A Center grant funded by an Institute, of course, is focused on a disease entity of particular interest to that Institute. All Institutes, in addition, funded large Research Program

Project grants to the combined total of more than 23½ million that year. Each Institute handles review of the projects in its own way, and, of course, designs its own program. Mental Health spent an added $2 million on Mental Health Special Studies in fiscal year 1963.

Other DRFR programs permitted Special Research Resources grants totaling $6 million in 1963, for 17 computer centers and 1 biomedical engineering facility. The program aims to provide large-scale resources in areas of major multidisciplinary and multicategorical research endeavor. The Division also funded grants promoting the Regional Primate Research Center program started in 1959, and until fiscal year 1963, administered by the National Heart Institute.

(c) Expenditures Under Traditional Research Grants

Monies expended under each NIH funded research grant project are reported to the Division of Research Grants annually. The Expenditures Report form utilized requires an itemization by specific cost category.

Table 4
Cost Category of Expenditure, Selected NIH Research Grants
Fiscal Years 1951, 1958 and 1960

Category of expenditure	1960	1958	1951
Percent	100.0	100.0	100.0
Professional personnel	30.3	30.0	32.7
Nonprofessional personnel	23.8	27 5	30.8
Consumable supplies	13.7	12.9	18.0
Equipment	14 0	12.2	8.5
Travel	2.5	2.4	2.0
Other direct costs	3.5	2.8	1.1
Indirect costs	12.2	12.2	6.9

FUNDS BY COST CATEGORY
In table 4, proportionate expenditures are shown by cost category for a sample of Expenditures Reports at three selected times. In 1951, indirect costs were set at 8 percent of direct costs; in July 1955, however, the limit was raised to 15 percent of direct costs.[1]

ANALYSIS OF 1,008 PROJECTS, FISCAL YEAR 1960
Data for fiscal year 1960 are summarizations from a thorough review of a systematic sampling of research grants active that fiscal year.[2] Roughly, proportionate expenditures fall into four main headings: professional salaries (30%); nonprofessional salaries (24%); permanent equipment and consumable supplies (28%); other costs--travel, alteration and renovation, miscellaneous items, and indirect costs (18%).

In this 1960 study, separate tabulations are presented whereby distribution of expenditures is shown by category when research grant projects are grouped according to: (1) NIH Institute; (2) dollar value of research grant project during the given fiscal year; (3) age of research grant project at time of study; and (4) type of sponsoring institution. (appendix tables 8,9,10,11)

Expenditures, by NIH Institute. Distribution of costs by category follows a generally consistent pattern among the various Institutes with the exception of the National Institute of Mental Health. NIMH research grant projects reported the disbursement of a higher proportion of funds to personnel and a lower proportion of funds for equipment and consumable supplies than did research grant projects funded by the other Institutes that fiscal year. However, this large NIMH value for personnel is attributable to salaries of professional persons other than the principal investigator. Percentage distribution of costs of PI salaries accounted for a larger proportion of total funds under National Institute of Dental Research and the (then) Division of General Medical Sciences research grant projects (11 percent in each case) than it did for NIMH projects (9 percent).

Expenditures, by age of project For first year grants, a higher proportion of funds was devoted to permanent equipment, but a lower proportion to salaries, than among older grants. Thus, under the 369 new projects in this study, 25 percent of funds were directed toward permanent equipment. Projects which were reported at two or more years of duration included 18 which had been in existence for more than 10 years; still, the proportion of funds spent on permanent equipment did not exceed 12 percent during any year beginning with the second year of research. It is also noteworthy that among the 369- 1st year projects, 42 percent of funds were utilized for payment of salaries, whereas under the remaining projects the minimum percentage of funds for salaries (at two or more years) was 54 percent of the total expended.

(d) Expenditures Under Other Research Grants

GENERAL RESEARCH SUPPORT EXPENDITURES
GRS expenditure data have been published only for the initial year of operation. Funds were first made available by NIH on January 1, 1962, and DRFR, in releasing analytical data stresses the developmental character of activity during this first 12-month period. "Largest awards, of course, went to those institutions most heavily engaged in health related research, the medical schools. As traditional centers for medical research and long term recipients of substantial research awards from multiple sources, they were by the GRS formula entitled to generally larger awards." Table 5 shows distribution of expenditures by major category

1 NIH. DRG. OC. Percentage Distribution of Public Health Service Research Grant Funds by Categories of Expenditure and Certain Fiscal Years. Tabular material presented February 1960.
2 NIH. OD. OPP. DAS. Program Analysis Report No. 13. An Analysis of Expenditures Under Research Grants Supported by The National Institutes of Health, Public Health Service, Fiscal Year 1960. Draft for review purposes.

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Table 5

Proportional Expenditures of General Research Support Funds, by Major Category and Professional Orientation of Sponsoring Institution
Calendar Year 1962

Expenditure category	All institutions	Professional orientation of sponsoring institution			
		Medical	Dental	Public Health	Osteopathy
Total	$20,000,000	$16,471,926	$2,025,143	$1,293,877	$209,054
Percent	100.0	100.0	100.0	100.0	100.0
Salaries (personnel)	39.4	40.7	30.9	40.5	34.7
Permanent equipment	26.1	26.7	21.0	29.5	18.5
Trainees	12.8	11.5	22.8	7.1	29.6
Indirect costs	12.1	12.1	12.5	11.2	12.5
Consumable supplies	6.4	6.3	7.4	7.2	3.9
Travel	.8	.5	1.7	2.2	.2
Other	2.4	2.3	3.7	2.3	.6

When proportion of expenditure by category is contracted for GRS and for traditional research grants, 40 percent of expenditures under the former but 54 percent under the latter are allocated to personnel. In the reverse, proportion of funds for permanent equipment is higher under GRS grants, 26 percent, in contrast to that under traditional research grants, 14 percent. Greatest difference is in the category of trainees, where almost 13 percent of GRS funds but no traditional research grant funds appear.

EXPENDITURES UNDER GENERAL CLINICAL RESEARCH CENTERS

In its Annual Report for Fiscal Year 1963, the General Clinical Research Centers Branch presents charts and tables analyzing distribution of expenditures under the program from its inception in fiscal year 1960 through 1963. These data are reproduced in table 6 below.[2]

Table 6

Expenditures Under General Clinical Research Centers and Their Distribution Over A 4-Year Period
Fiscal Years 1960 -1963

Expenditure category	4-year period,1960-63		Expenditures during each fiscal year			
	Dollars	Percent	1963	1962	1961	1960
Total	$50,458,787	100.0	$17,373,923	$22,123,099	$8,000,000	$2,961,765
Operating expense	18,004,301	35.7	6, 781,416	8,780,764	1,841,301	600,820
Hospitalization	18,174,593	36.0	8,155,419	7,060,067	2,161,165	797,942
Renovation, fixed equipment	11,021,338	21.9	1,444,267	4,984,755	3,271,509	1,320,807
Indirect costs	3,258,555	6.4	992,821	1,297,513	726,025	242,196

Proportionate expenditures for renovation and fixed equipment represented the largest category of expense during the first year of the program (1960) when they amounted to 44.6 percent of the total, but declined to the smallest category in 1963 when they represented only 8.3 percent of total funds. "This decline,and the progressive increases in the operating expense and hospitalization categories, reflect the basic characteristics of an expanding program; namely, the continuation elements of operating expense and hospitalization impose a greater impact (and stabilizing effect) on fund requirements than the new center elements of renovation and fixed equipment. This is further accentuated when the growth rate of new centers declines sharply as in FY 1963." These two categories of expenditure, then, distinguish the expenditure pattern of general clinical research centers in contrast to that for the traditional research grant and GRS grant where program approach is less oriented to clinical research.

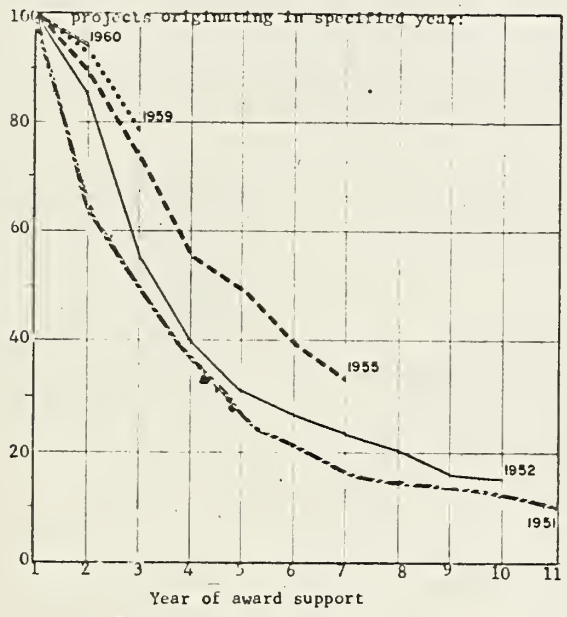
1 NIH. DRFR. General Research Support Branch. Annual Report for Fiscal Year 1963, pp. 13, 18, 19.
2 NIH. DRFR. General Clinical Research Centers Branch. Annual Report for Fiscal Year 1963, pp. 51-53.

(e) Fiscal Duration of Research Grant Projects

Several years ago, the fiscal duration of NIH-funded research grant projects was analyzed in terms of number of subsequent years of payment accorded proposals originating each fiscal year 1951 - 1962. Although it was possible to follow grants initiated in 1951 for as many as 11 years, these data necessarily end before the known history of grants originating at a later time spans an equal period.[1]

Nevertheless, survival rates by year of origin show a consistently greater life span for projects originating at later, in contrast to earlier, points of time.

Figure 4
SURVIVAL RATES BY YEAR OF NIH AWARD SUPPORT FOR RESEARCH GRANT PROJECTS ORIGINATING IN SELECTED FISCAL YEARS



SURVIVAL BY YEAR OF ORIGIN

For purposes of this study, survival data were tabulated for 19,325 research grants originating 1951-1962. Chairman grants, "small" grants, and supplement grants were excluded from the tabulation. Counts were made in such a way that each project retains its identity regardless of changes in serial number resulting from transfer of sponsoring institution or in NIH funding Institute. (appendix table 12)

In figure 4, survival rates are shown for research grant projects originating in fiscal year 1951, for those beginning in 1952, in 1955, 1959 and 1960. Each line represents the percentage of grants from among the total which obtained a 2nd, 3rd, or more years of NIH support up to time of study.

Whereas only 36 percent of projects beginning in 1951 received a 4th year of support, 55 percent of projects activated in 1955 were financed a 4th year. At the 7th year, 17 percent of the 1951 group but 32 percent of the 1955 group continued to get NIH support.

An interesting feature of research grant survival is the low average annual survival rate of projects at the end of 3 and 5 years. Of 6,490 projects completing a 3rd year, 4,888 or 75 percent were awarded a 4th year of support; of 2,041 projects completing a 5th year, 1,651 or 81 percent were supported a 6th year.

OVERALL SURVIVAL RATES (AVERAGE, AND AVERAGE ANNUAL)

From the left-hand portion of table 7 it is seen that about two-thirds (67.1%) of the projects under study received at least 3 years of NIH support; one-third (33.1%) were given at least 6 years of support; and one-tenth (10.1%) survived 11 years.

Data were also examined from the standpoint of the percentage of projects which might be expected to survive from a given year to an additional year of support. With the exception of research grant projects completing their third year, at least four-fifths (80% or more) of projects were found to have been allowed another year of support. The average annual survival rate for projects between the 3rd and 4th year was lower (75.3%).

The study section custom of reviewing most grants on a competing basis at time of origin and again at end of three years of operation accounts in large part for this occurrence.

Table 7
Average Survival Rates and Average Annual Survival Rates of NIH Research Grant Projects Initiated Fiscal Years 1951 - 1960

Average survival 1/		Average annual survival 2/	
Number of years of support	Percent of projects surviving specified number of years	Year of support survived	Percent of projects in specified year surviving to subsequent year
1	100.0		
2	84.5	1st	84.5
3	67.1	2nd	81.5
4	48.6	3rd	75.3
5	40.0	4th	83.9
6	33.1	5th	80.9
7	26.5	6th	83.5
8	21.3	7th	86.1
9	16.7	8th	85.0
10	13.5	9th	89.6
11	10.1	10th	87.3

1/ Survival in terms of the total duration of grants.
2/ Survival from one year of award support to the next year.

1 NIH. OD. OPP. DAS. Program Analysis Report No. 16 Fiscal Duration of Research Grant Projects Awarded by the National Institutes of Health, Public Health Service, Fiscal Years 1951-1962. Draft for review purposes.

(f) Training Grant Awards (number and size)

NIH graduate training grants are made to allow qualified public and other nonprofit institutions to establish, expand, and improve training opportunities in health related sciences. A grant is made to an institution which, in turn, appoints the specified number of trainees. Such persons must be interested in careers in research, teaching, or (in certain designated areas) clinical service. The academic level of training supported is in general postbaccalaureate, including predoctoral and postdoctoral graduate.

NIH undergraduate training grants are made to medical and certain other professional schools in the U.S. and its territories. Such a grant is made to establish, expand, or otherwise improve the training given to students relative to prevention, diagnosis and treatment of specified diseases, as determined separately by each awarding Institute.[1] The undergraduate program is small in comparison with the graduate program, accounting for only about 16 percent of awards and about 10 percent of funds devoted to the NIH training grant program in fiscal years 1962, 1963 and 1964. Awards are made by four Institutes: Mental Health, Cancer, Heart, and Dental Research (the latter having been transferred to the Division of Dental Public Health and Resources, BSS)

TRAINING GRANT MANAGEMENT

Whereas a research grant application is completed by a principal investigator, a training grant is the responsibility of the training institution which designates a program director whose name appears on the application form and who must be the person responsible for active direction of the proposed training program. Individuals serving as trainees are selected by the training institution. Except for awards of the National Institute of Mental Health and the National Institute of Neurological Diseases and Blindness, the determination of stipend levels has been responsibility of the training institution until recently

PROGRAM GROWTH

Number of training grant awards increased more than 8-fold during the years 1954-1964, while funds awarded grew 16-fold over the same period, reaching close to $166 million in fiscal year 1964. Through 1955, funds awarded were about evenly divided between the graduate and undergraduate program. Beginning with 1956, however, graduate funds exceeded undergraduate. Since 1960, the undergraduate program has been responsible for only about 10 percent of NIH training grant funds.

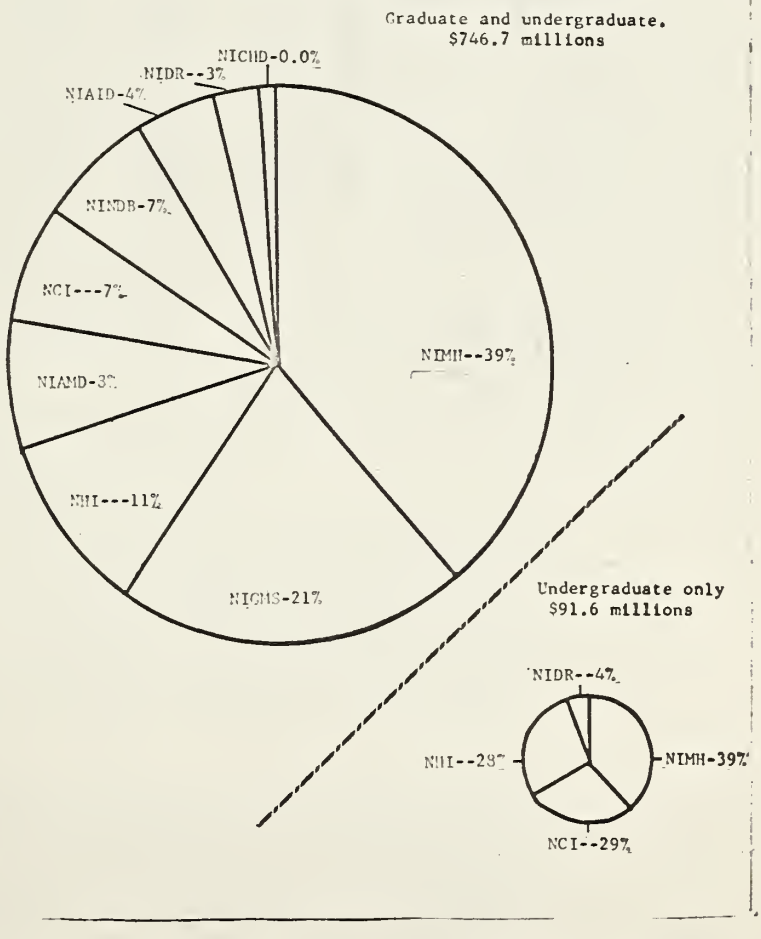
Training grants originated with the National Cancer Institute. The purpose was to train undergraduate professional students so that they might be prepared to treat cancer patients in the practice of medicine. By 1948 more than 80 undergraduate programs had been initiated in cancer; some 60 graduate programs had also been initiated by NIMH.

Over the years, NIMH has awarded some 39 percent of total NIH training grant funds. Grants in General Medical Sciences have become increasingly important in recent years and account for 21 percent of the total since 1954. (appendix table 13)

GRANT RECIPIENTS

At the program's outset, institutions of higher education were awarded close to 93 percent of NIH training grant funds, with research institute and other nonprofit organizations together receiving close to 5 percent. Proportionately, the funds to these two categories of sponsoring institutions have recently receded somewhat in favor of training grants to hospitals.

Figure 5
DISTRIBUTION OF NIH TRAINING GRANT FUNDS, BY INSTITUTE. GRADUATE AND UNDERGRADUATE. FISCAL YEARS 1954-1964



With rare exceptions, NIH training grants are awarded to domestic institutions; although in each of the past few years at least 13 programs were conducted abroad, amounting to $380 thousand in fiscal year 1962, almost $480 thousand in 1963, and $390 thousand in 1964.

1 DRG. CDRB. Administrative Policies Governing Training Grants of the National Institutes of Health. May 1, 1962.

FUNDS AWARDED

The average size of training grant doubled from 1954 to 1962: for institutions within the United States and possessions, from $17,368 to $38,199. The average size of training grant in foreign locations was $15,147 in fiscal year 1959, $30,026 in 1962.

As noted in table 8 there has been a continual lowering in proportion of NIH training grants funded in the amount of $19,999 or less -- from 61 percent of the total in fiscal year 1954, to 27 percent in 1964. Rising proportion of grants in the amount of $50,000 or more is also shown -- from 1 percent in 1954 to 25 percent in fiscal year 1964. (appendix table 14)

Table 8

Distribution of NIH Training Grants Awarded for Each Institute/Division, by Size of Grant Graduate and Undergraduate 1/. United States and Foreign. Fiscal Years 1954 and 1962-1964

Size of training grant	All Institutes	Graduate and undergraduate training grants by institute								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Fiscal Year 1964										
Grants	4,346	182	358	77	249	104	699	369	2,004	304
Percent	100	100	100	100	100	100	100	100	100	100
Under $20,000	27	18	20	16	32	19	12	15	37	28
20,000 - 49,999	48	48	60	53	46	50	47	65	43	46
50,000 - 99,999	20	29	18	23	16	29	33	18	15	22
100,000 or more	5	5	2	8	6	2	8	2	5	4
Fiscal Year 1963										
Grants	4,114	167	425	0	275	138	760	389	1,716	244
Percent	100	100	100	0	100	100	100	100	100	100
Under $20,000	33	21	34	0	43	14	13	20	46	19
20,000 - 49,999	47	52	53	0	41	61	49	65	39	59
50,000 - 99,999	17	25	12	0	12	22	31	13	12	21
100,000 or more	3	2	1	0	4	3	7	2	3	1
Fiscal Year 1962										
Grants	3,697	168	329	0	340	155	683	376	1,395	251
Percent	100	100	100	0	100	100	100	100	100	100
Under $20,000	37	30	30	0	53	46	16	23	49	33
20,000 - 49,999	46	51	59	0	35	46	51	66	36	48
50,000 - 99,999	15	17	11	0	9	8	28	10	12	18
100,000 or more	2	2	0.0	0	3	0.0	5	1	3	1
Fiscal Year 1954										
Grants	565	0	1	0	136	0	0	129	276	23
Percent	100	0	100	0	100	0	0	100	100	100
Under $20,000	61	0	100	0	40	0	0	39	79	74
20,000 - 49,999	38	0	0	0	60	0	0	59	18	26
50,000 - 99,999	1	0	0	0	0	0	0	2	2	0
100,000 or more	0.0	0	0	0	0	0	0	0	1	0

1/ Supplemental grants included in count of grants. Excludes chairman grants.
Source: DRG. SAB. DP. Computer printout for each fiscal year.

In terms of dollar awards, lower proportion of NIH training grants funded in the amount of $19,999 or less is evidenced by the gradual change from 34 percent of funds to grants this size in 1954, to 7 percent in fiscal year 1964. Higher percentage of funds to larger training grants is shown by the contrast of 3 percent of funds going to grants in the amount of $100,000 or more in 1954, whereas 17 percent went to grants of this size in fiscal year 1964. (appendix tables 15, 16) This phenomenon may partially be explained by the smaller proportion of funds devoted to the undergraduate program beginning with fiscal year 1956. (appendix tables 17, 18) With close to 90 percent of training grant funds expended for graduate training grants, it is to be expected the pattern of awards for NIH graduate programs will approximate that for the total training grant program. This is seen from tabulations made separately for the graduate program alone. (appendix tables 19, 20, 21, 22)

CEILING ON SIZE OF UNDERGRADUATE TRAINING GRANT AWARDS

For the most part regulatory authorities have stipulated maximum grant size for NIH undergraduate training awards as follows: $25,000 to a 4-year medical school; a school of osteopathy (Cancer or Heart Institute grants), or a collegiate school of nursing (Mental Health grant); $15,000 to a 2-year medical school (Heart or Mental Health); school of osteopathy (Mental Health), public health school (Heart); $5,000 to a dental school (Cancer).[1] Although in recent years certain Congressional appropriations have given limited authority to NIH to extend the dollar ceiling beyond $25,000 for training grants to medical schools or schools of osteopathy, this priviledge has been used only in exceptional cases as, for instance, teaching grants in psychiatry, human behavior or nursing (all Mental Health), or those for dental auxiliary training.

1/ Ibid., p. 4.

GROWING CONCENTRATION OF TRAINING GRANT FUNDS AT $50,000 - $99,999

Figure 6 shows proportion of NIH training grant funds disbursed according to three categories of award size in fiscal year 1954, and again in the three more recent fiscal years 1962, 1963 and 1964. Although the chart draws attention to rising proportion of funds in each of the larger size categories, particular interest lies in the center pattern. Whereas in 1954 only 5 percent of training grant funds represented individual grants in the amount of $50,000 - $99,999 the percentage increased to 31, 33 and 36 in fiscal years 1962, 1963 and 1964 respectively. This is, of course, a reflection of change in the graduate program, inasmuch as few undergraduate training grants are awarded in an amount exceeding $25,000.

COMPARISON OF DISTRIBUTION OF NIH TRAINING GRANT AND RESEARCH GRANT FUNDS BY SIZE OF AWARD

When figure 6 is contrasted with figure 3 and when data in table 9 are examined, two conclusions may be drawn: (1) The trend toward higher percentages of research grant than of training grant funds at $100,000 or over is attributable to the larger size of research than of training grants; (2) Both in number of awards and in dollars funded, proportion of training grants in the amount of $50,000 - $99,999 has exceeded that of research grants in recent years. Four percent of research grant awards but 5 percent of training grant awards were in the amount of $100,000 or more in 1964; 7 percent of the former, but 20 percent of the latter were in the amount of $50,000 - $99,999 that year.

Figure 6
PROPORTION OF NIH TRAINING GRANT AWARDS ALLOCATED TO THREE CATEGORIES OF AWARD SIZE

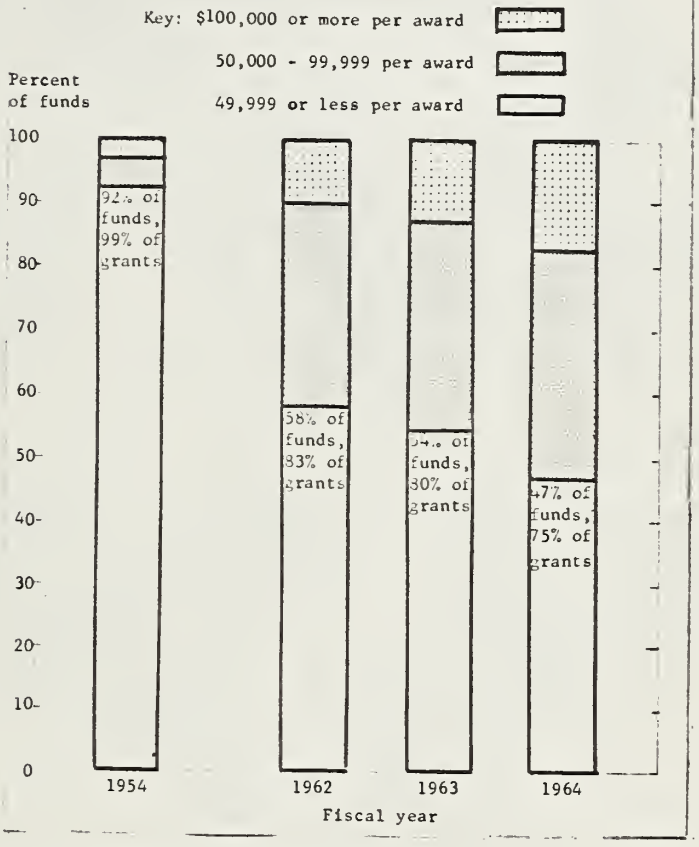


Table 9
Distribution of NIH Research and Training Grants, by Size[1/]
United States and Foreign. Fiscal Years 1954 and 1964

Size of award	Number of grants		Dollars (in thousands)	
	Research	Training	Research	Training
	Fiscal year 1964			
Total	16,020	4,346	$497,924	$165,908
Percent	100	100	100	100
Under $20,000	56	27	20	7
20,000 - 49,999	33	48	32	40
50,000 - 99,999	7	20	15	36
100,000 or more	4	5	33	17
	Fiscal year 1954			
Total	2,923	565	$30,827	$9,813
Percent	100	100	100	100
Under $20,000	91	61	70	34
20,000 - 49,999	8	38	21	58
50,000 - 99,999	1	1	5	5
100,000 or more	0.0	0.0	4	3

1/Supplemental grants included in count of grants. Data for research grants include field investigation awards; data for training grants include graduate and undergraduate but exclude chairman grants.

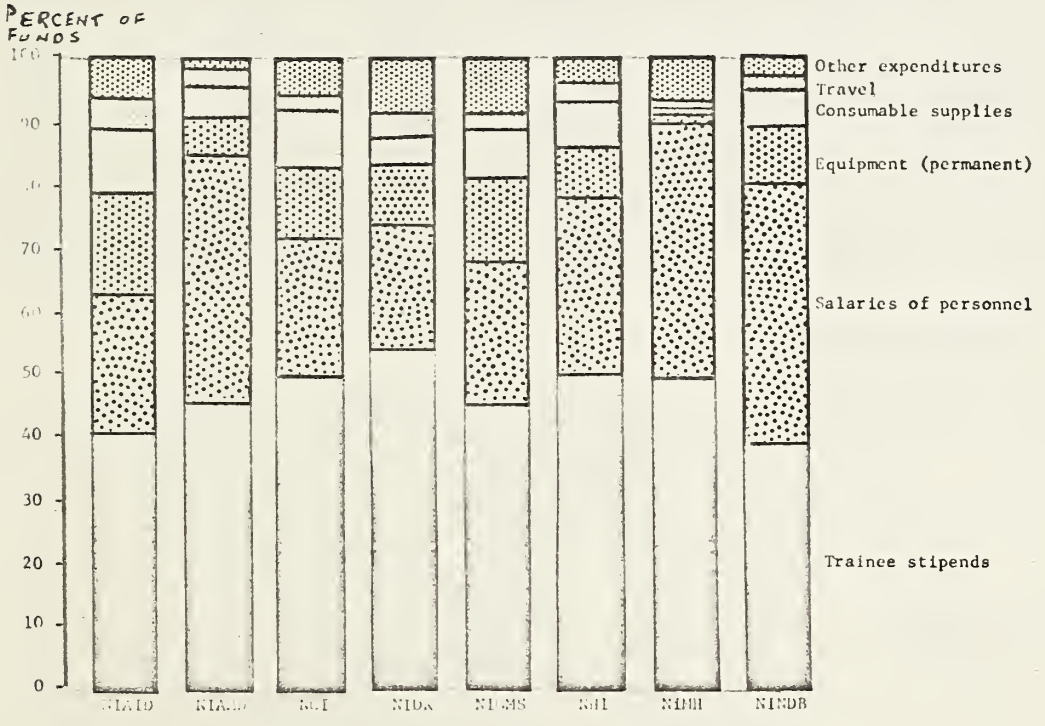
(g) Expenditures Under [redacted] Graduate Training Grants

Distribution of funds expended under NIH graduate training grants has been determined from training grant expenditures reports for fiscal year 1961, by NIH Institute and for all Institutes combined. This information relates to 2,331 grants for which $104.7 million were made available during that fiscal year. This fell during the period when NIH initiated forward financing of the training grant program in order to bring all training grants to a common anniversary date. Hence fiscal year 1961 funds were advanced prior to July 1, 1961 for expenditure during fiscal year 1962. Reporting of expenditures was not in order, then, until the following year (1963).

DISTRIBUTION BY CATEGORY OF EXPENDITURES

Expended funds amounted to some $88.1 million of the $104.7 million made available under the NIH graduate training program, fiscal year 1961. The major category of expenditure (44 percent of total costs, 47 percent of direct costs) was that of trainee stipends. Second was that of salaries of personnel (31 percent of total costs, 33 percent of direct costs). Other, smaller proportionate expenditures were for permanent equipment, consumable supplies, travel, "other" items, and indirect costs (5.7 percent of total costs, but 6.2 percent of direct costs). The indirect cost reimbursement per training grant institution is stipulated by the Bureau of the Budget Circular A-21 not to exceed "8 percent of total direct costs, subject to reduction of the total grant, or refunding, if the institution's substantiated indirect cost rate is subsequently determined to be less than 8 percent of total direct costs."[1] Figure 7 shows distribution of costs for training grants funded by each Institute, taking into consideration only direct costs.

Figure 7
DISTRIBUTION OF DIRECT FUNDS EXPENDED UNDER NIH GRADUATE TRAINING GRANTS, BY CATEGORY for EACH INSTITUTE. FISCAL YEAR 1961



While the overall pattern of expenditure is somewhat the same by Institute, it is interesting that highest proportion of expenditures for trainee stipends was shown by the Dental group (50 percent), lowest by grants in Neurological Diseases and Blindness (35 percent). The latter, and the Mental Health grants showed largest proportional allocation of funds for salaries of personnel (39.9 and 39.4 percent respectively). NIMH, on the other hand, was particularly low in proportion of funds for permanent equipment and consumable supplies (only 1 percent). (appendix table 23)

1 PHS Grants for Training Projec ts. Policy Statement. PHS Publication No. 1302., p. 13.

UNEXPENDED FUNDS

Sixteen percent of funds available for graduate training grants (average of about $7,000 per grant) were unexpended fiscal year 1961. This varied considerably by Institute, with a range from close to 10 percent for NIDR to 21½ percent for NIAID. Second highest were NCI and NIGMS, each with 19 percent of funds unexpended. This amounted to an average unexpended balance of $13,129 per training grant for NCI, $10,921 for NIGMS.

Carry-over of $5,000 is permitted, resulting in average of $8,129 per cancer grant and $5,921 per general medical sciences grant unused in fiscal year 1961. For one Institute, NIAMD, the unexpended balance was less on average per grant, than that permitted. For three Institutes, NIDR, NHI, and NIMH, the average dollar value of unexpended funds was only slightly higher than the $5,000 carry-over permitted. According to regulations, final expenditures reports may show unexpended obligations only in the category of trainee stipends. Data presented are provisional, however, in that they include information from some preliminary reports. (appendix table 24)

AVERAGE COST PER GRADUATE TRAINING GRANT and PER TRAINEE

Average cost per graduate training grant and per trainee varied by Institute. Trainee costs shown below include costs for regular and part-time (short-term) trainees, and must be interpreted accordingly. No relationship between order of average cost per grant and average cost per trainee is noted by funding Institute. Trainee stipends which comprise the largest expenditure category partially explain higher average costs for NCI and NIDR grants. (appendix table 25) The cancer group was also higher in average costs for consumable supplies and permanent equipment, while the dental group (whose training grants have since been transferred to BSS, Division of Dental Public Health and Resources) showed high average expenditures in the "other" category. Some 560 individuals trained on the 54 grants funded by NCI, whereas 260 persons trained on the 43 NIDR funded grants. NIMH funded grants, with 934 trainees on 5,179 graduate projects, occupied 5th place in average cost per grant, 4th in average cost per trainee. NIMH programs show low expenditures for permanent equipment and consumable supplies as well as for travel.

Table 10
Average Costs per NIH Graduate Training Grant
Fiscal Year 1961 Funds

Institute	Average cost per graduate training grant	Average cost per trainee on graduate training grant
All	$37,798	$5,918
NCI	55,551	5,357
NIDR	48,523	8,025
NIGMS	46,277	4,791
NHI	40,380	5,780
NIMH	35,415	6,387
NIAID	34,281	6,228
NINDB	34,091	7,181
NIAMD	26,163	8,151

COMPARISON OF TRAINING GRANT AND RESEARCH GRANT EXPENDITURES

Distribution of expenditures under training grants differs from that under research grants because of program characteristics. Almost one-half of direct costs under NIH training grants are attributable to trainee stipends, an expenditure category which does not appear under research grants. In contrast, costs for nonprofessional personnel are a source of one-fourth of research grant expenditures but play little part in training grant costs. For both programs, professional personnel absorb some 30 percent of total expenditures. Proportion of funds for consumable supplies and for equipment under research grants was almost double that under training grants; that for travel was about equal under both programs; "other" expenditures accounted for a higher proportion of expenditures under training than under research projects.

(h) NIGMS Budgetary and Expenditure ~~Data~~ training grant data

A study of expenditures for training grants active during fiscal year 1959 (academic year 1958-1959) funded by the (then) Division of General Medical Sciences reveals proportionate distribution of expenditures by category which are remarkably close to those shown for NIGMS under the recent study of training grant expenditures fiscal year 1961. In the former period, forward financing did not exist, so expenditures represent the academic year 1958-1959; in the latter, with forward financing, they represent the academic year 1961-1962.[1] Main emphasis of the early study was a comparison of budgeted versus expended funds. The method of analysis was that of calculating percentage distribution of funds budgeted, also of funds expended, by category. Percentage expended was then divided by percentage budgeted, and a ratio obtained. A figure in excess of 100 percent was interpreted to reveal expenditures in excess of budgeted distributions; a figure below 100 percent, an expenditure proportionately less than that budgeted. Only in two categories was proportionate expenditure greater than anticipated -- residual ("other") where the difference was small, and permanent equipment where the difference was great. The ratio for permanent equipment increased as projects were placed in groups distinguishing their age: 155.1 for 88 grants in their original year; 192.3 for 41 in their 2nd year; 200.0 for 29 grants at 3 or more years. (appendix tables 26,27,28)

Table 11
Distribution of Expenditures, NIGMS Training Grants
for the Academic Years 1958-1959 and 1961-1962

Category of expenditure under training grant	158 grants 1958-1959	514 grants 1961-1962
All expenditures (thousands)	$4,607	$23,786
Percent	100.0	100.0
Personnel	21.0	21.1
Trainee stipends	47.7	42.4
Permanent equipment	11.7	12.3
Consumable supplies	6.1	7.0
Travel	2.2	2.3
Other	4.6	8.1
Indirect costs	6.7	6.8

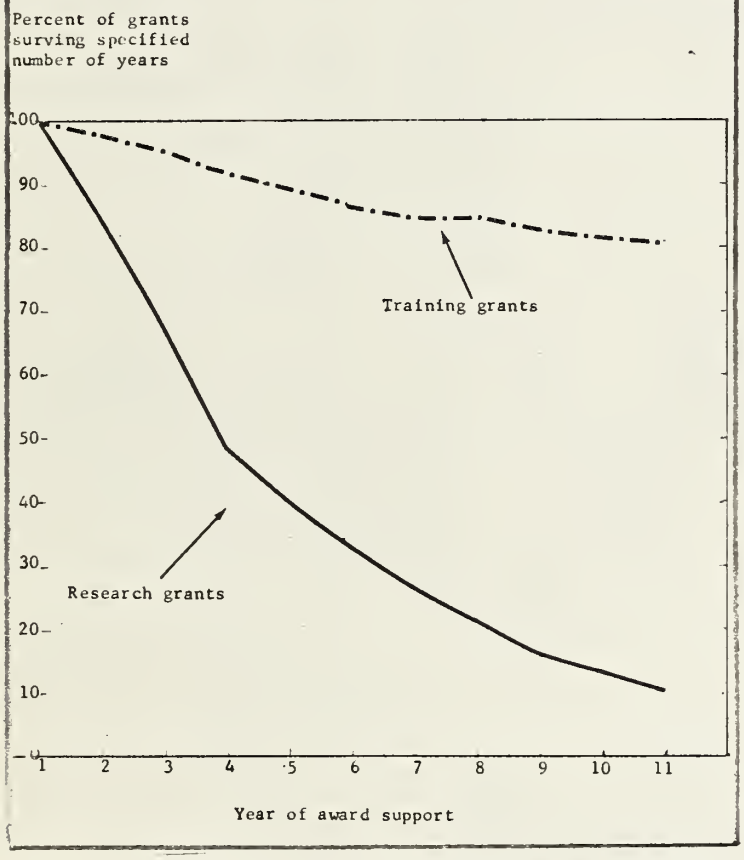
1 NIH. OD. OPP. DAS. Report No. 11. Draft for review purposes. February 1963

(i) Survival of Training Grants as Contrasted With That of Reaearch Grants

The history of training grants is tempered by two sets of circumstances: (1) the comparatively amall number of training grants made in early years, together with the fact that Heart and Cancer grants appear to be long lived; and (2) the large proportion of Mental Health training grants from among the total, dominating the program until the National Institute of General Medical Sciences placed emphasis upon it.

Figure 8

COMPARISON OF AVERAGE SURVIVAL RATES
for 2,767 NIH TRAINING GRANTS ORIGINATING FISCAL YEARS 1947-1961
and 19,325 NIH RESEARCH GRANTS ORIGINATING FISCAL YEARS 1951-1961
by YEAR OF AWARD SUPPORT



AVERAGE SURVIVAL RATES

A recent study of training grants over the period 1947 - 1961 reveals that training grants as a whole are far more stable than are research grants and are likely to endure for many years.[1] This can be seen from figure 8 which shows the percent of training grants and of research grants surviving successive yeara of support. (appendix tables 29,30)

On the average, 98 percent of the training grants under study survived into their second year. Almost eight-tenths were still active in their eleventh year.

By way of contrast, 84½ percent of research grants survived into their second year, 40 percent were atill active in their fifth year, but only 10 percent remained active 11 years.

SURVIVAL RATES BY YEAR OF ORIGIN

Training grant survival data differ from research grant data in another respect. It has already been observed (figure 4) that research grants originating in more recent years have tended to receive support over a longer period than did the earlier research grants. This has not been a characteristic of training grants whose survivorship was more dependent upon program purpose than upon the chronological sequence of activation.

Highest survival is shown for training grants originating in fiscal years 1947 and 1948. The two oldest (Cancer) grants which began in 1947 were still active in their sixteenth year (1962). Of the 108 Cancer grants beginning in 1948 and 1949, all but two were still alive in their fifteenth or fourteenth year (1962). Only 1 of the 47 Heart grants beginning in 1950 were terminated before the thirteenth year (1962).

Lowest survival is shown for training grants originating in 1951 and 1952. These were often conceived on an experimental basis, with reasonable possibility of early termination. Grants activated in fiscal years 1951 and 1952 had a termination rate of 30 and 50 percent per annum respectively, in contrast to a rate of 18 percent or less for grants originating at other times. In each of the years, most of the training grants activated were in mental health disciplines.

Flexibility of the NIMH training grant program led to the approval of some grants which were originally conceived on a short-term basis, and to other training grant programs eventually transferred to a different NIH Institute. For example, training grants in pediatric psychology were initiated in 1951 and terminated after a 3-year period, having accomplished the experimental purposes for which they were developed. Other NIMH training grants activated in 1951 were entrusted to the National Institute of Neurological Diseases and Blindness in 1954. In time, NIMH pilot projects were introduced to promote special training in such areas

1 NIH. NICHD. Office of Program Analysis. Natural History of Training Grants. Draft of April 1964.

as juvenile delinquency, mental retardation, geriatrics, and alcoholism. Beginning in 1957 pilot projects were awarded to a few medical schools and universities for training of biological and social scientists in mental health. The latter were incorporated into a different program in 1952.[1]

AVERAGE ANNUAL SURVIVAL RATES

The chances of survival of an NIH training grant and of an NIH research grant from one year to the next are shown in figure 9. It can be seen immediately that a training grant is more likely to continue to exist from one year to another than is a research grant.

The slightly lower rate of average survival of both types of grant at the third and fifth years probably reflects study section custom of initial recommendation for approval over a 3 or 5-year period. At expiration of the original award period, reevaluation of such a project falls due; some grantees may fail to reapply for continuation funds; others may be unable to establish research potential for their projects into the future.

TOTAL TERMINATIONS

Over one-fifth of the terminations of training grants originating 1947-1961 occurred after projects had been in existence for one year; and four-fifths of the terminations occurred during the first five years of operation. This, however, must be viewed in perspective: as already mentioned, almost nine-tenths of NIH training grants were still active in their eleventh year.

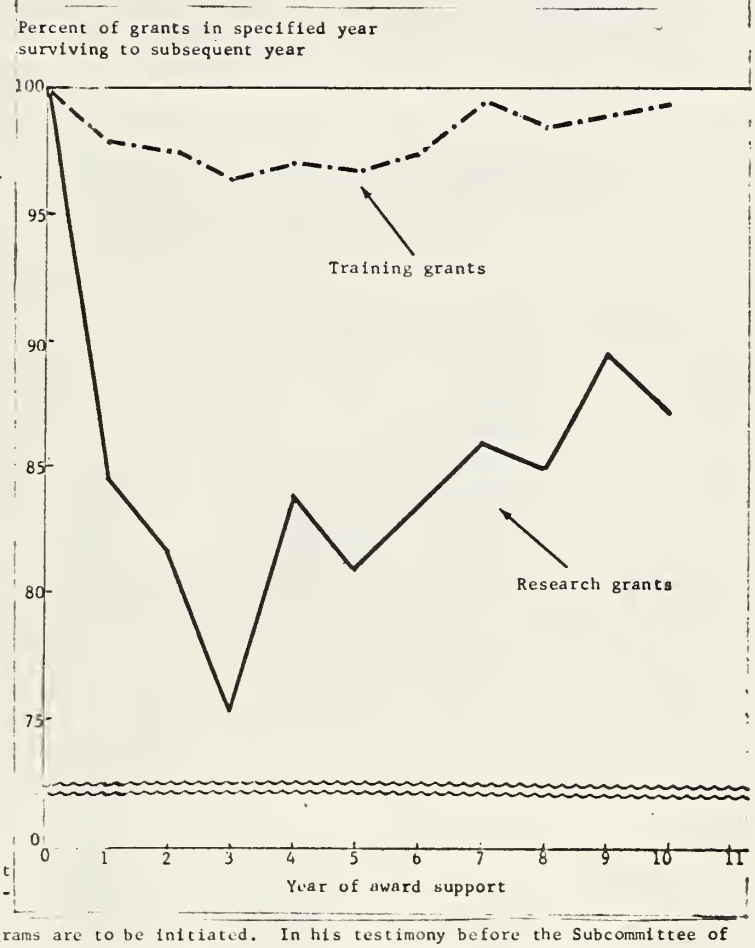
Figure 9

COMPARISON OF AVERAGE ANNUAL SURVIVAL RATES

for 2,767 NIH TRAINING GRANTS ORIGINATING FISCAL YEARS 1947-1961

and 19,325 NIH RESEARCH GRANTS ORIGINATING FISCAL YEARS 1951-1961

by YEAR OF AWARD SUPPORT



TRAINING GRANTS A SOURCE OF FUTURE RESEARCH GRANT SCIENTISTS

The long lives of most NIH training grants result in commitment of funds over considerable periods of time. It is therefore essential that appropriations for NIH training grants be increased from year to year if new programs are to be initiated. In his testimony before the Subcommittee of the Committee on Appropriations, House of Representatives, February 1965, Dr. James A. Shannon, Director, National Institutes of Health, spoke as follows:[2]

> "..... An essential part of an overall development of training competence in the next 4 or 5 years is the expansion of general research and training support to provide key staff so that responsibility for graduate education can be centered in the institution itself.
>
> "I think that, particularly in view of the heart, cancer, and stroke programs, one would then expend the level of undifferentiated training -- that is before the individual makes his commitment to research or to service. Our programs could then provide funds to develop a larger number of people as research scientists. Whoever had the responsibility for service would pick up the service-oriented people and see that they had suitable training for that special purpose."

1 National Institute of Mental Health Training Grant Program, Fiscal Years 1948-1961. PHS Publication No. 966. U S. Govt. Print. Off., Washington, D.C., pp.2-3.

2 Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives. Department of Health, Education, and Welfare. Part 3. National Institutes of Health. 89th Cong., 1st Sess. U.S.G vt Print. Off., Washington, D.C., 1965, p. 61.

(j) Fellowships, Traineeships and Research Career Program Awards

NIH training programs include fellowships, traineeships, and research career program awards (in addition to graduate and undergraduate training grants already mentioned). Their scope has been redefined from time to time in order to meet on-going needs, and to keep in balance requirements of universities and other health-oriented institutions for educators and clinical practitioners as well as research workers. The programs may be separated into those which offer training support and those which offer salary support.

TRAINING SUPPORT

NIH training support programs are currently envisioned to include:[1]

Special fellowships - to research workers for training here or abroad, who demonstrate need for highly specialized training and experience in order to increase their potential as independent investigators;

Predoctoral fellowships - to post-baccalaureate students who wish to acquire graduate research training in basic biological sciences;

Postdoctoral fellowships - to outstanding holders of doctorates interested in advanced research training;

Special fellowship grants - to provide advanced or specialized training that will assist in the development of a research and academic career in medicine, dentistry, public health and related areas;

International research fellowships - to be awarded through the Office of International Research, NIH, for outstanding medical research scientists.

Under NIH traineeships, an NIH-funded stipend is paid to each trainee, who is also entitled to tuition and fees at his training institution, to reimbursement for permissible travel, and to allowances for dependents. The range in stipend size is from $2,400 for an individual in his first year of predoctoral training, to $6,000 for a postdoctoral fellow who, in addition to his Ph. D., has had two or more years of relevant experience.

The National Cancer Institute introduced manpower training to NIH in 1938 by offering direct stipends for training in specialized areas of medical and related research, and in 1946 initiated fellowships to provide personal support (and certain additional costs) for persons engaged in research training at specified levels. NIMH introduced fellowships in fiscal year 1947, as did NHI. Today, NIGMS funds 30 percent of NIH fellowship and traineeship dollars.

Figure 10 illustrates growth in support according to Institute, for three periods of five years each. Although three Institutes--NCI, NIGMS,

Figure 10
DISTRIBUTION OF NIH FUNDS AWARDED FOR TRAINING SUPPORT
IN THREE PERIODS OF 5 YEARS EACH, BY INSTITUTE
UNITED STATES AND POSSESSIONS

1 NIH. DRG. CDRB. Information Statement on the Predoctoral, Postdoctoral, and Special Fellowship Programs of the Public Health Service.

and NIMH each funded more than $21 million for training support from 1949 to 1963, chronology of program growth differed considerably by Institute.[1] (appendix table 31)

SALARY SUPPORT

NIH also makes awards to institutions for salary support of selected career employees in a research or educational capacity.

The Research Career Awards program effective for several years beginning in November 1961, endowed senior scientists positions in amounts up to $25,000 annually. The objective was to encourage scientists of superior capability by offering stable, full-time research situations in university science departments and medical schools. RCA awards were in effect for 187 individuals fiscal year 1963, amounting to $3.9 million; for 249 persons in 1964, $5.5 million. Thoughtful evaluation led to termination of new awards in 1964 although awards already in effect continue to be funded.[2]

Under the Research Career Development Awards program, selected institutions receive salary support together with fringe benefits and a limited indirect costs allowance to be allotted to promising young scientists. An individual may hold such a research position for two 5-year periods. RCDA awards amounted to $10 million in fiscal year 1963 (some 680 awards), and $14 million in fiscal year 1964 (877 awards), with NIGMS the main funding Institute.

INSTITUTIONAL SETTING

In fiscal year 1954, 83 percent of awards and 77 percent of NIH fellowship/traineeship funds went to individuals at institutions of higher education. By fiscal year 1962 they accounted for more than 90 percent of awards and funds. Fellowship/traineeship placement at hospitals (other than those owned by a university for teaching purposes) represented 12 percent of awards and 16 percent of funds in fiscal year 1954, but 4 percent of awards and 5 percent of funds in 1962. Research institute and "other" organizations likewise were responsible for a lower proportion of NIH funds under these programs in 1962 than in 1954.

PROGRAM GROWTH

From 1954 to 1964, funds devoted to fellowship/traineeship and research career program awards increased 14-fold. This large increase has been due to various factors in addition to increasing numbers of awardees. Higher level of performance has been associated with enhanced program objectives, and costs have risen.

For Europeans, NIH confers postdoctoral fellowships, some few with a stipend of $5,000 but for the most part beginning at $6,000. These award recipients are entitled to the same allowance for members of the family and for travel as are U.S. postdoctoral fellowship awardees. It should be pointed out that they travel long distances, however, and the Office of International Research, NIH pays for a round trip ticket for each international fellow at time of incumbrance. This, together with the high level of appointment, rendered average value of fellowship to Europeans higher than that for U.S. appointees from fiscal year 1959 through 1962. Foreign fellowships have been reduced recently because of the limit imposed on grants for expenditure outside the U.S. as a part of the program of the Executive Branch to curtail outflow of dollars from the country.[3]

In fiscal year 1963, 4,496 individuals were in receipt of NIH fellowships, traineeships, and research career program awards (3,386 fellowships, 243 traineeships, 187 on research career awards, and 680 on research career development awards). In fiscal year 1964 the number had reached 4,834.

TOTAL NIH TRAINING, 1964

Summation of persons under all training efforts combined, fiscal year 1964 brings the total to 15,614 full-time and 10,893 part-time grantees under NIH sponsorship, as follows:[4]

Program	Full-time	Part-time
Total	15,614	10,893
Fellowship	3,465	0
Traineeship	243	0
Research career	249	0
Research career development	877	0
Training grant	10,727 1/	8,175 1/
Graduate	(10,630)	(7,300)
Undergraduate	(97)	(875)
General research support	53 2/	2,718 2/

1/ Fiscal year 1963 funded 2/ Calendar year

1 NIH. DRG. Growth of the Extramural Programs of the National Institutes of Health, Fiscal Year 1946 through Fiscal Year 1959. Draft of February 1960, pp. 45, 81 and 104.

2 Hearings before a subcommittee of the Committee on Appropriations, House of Representatives. Department of Health, Education, and Welfare. Part 3. National Institutes of Health. 89th Cong., 1st Sess. U.S. Govt. Print. Off., Washington, D.C., 1965, p. 48.

3 Ibid., p. 178.

4 PHS Grants and Awards, Fiscal Year 1964 Funds. Part II. U.S. Govt. Print. Off., Washington, D.C., 1965.

(k) Matching Grants, and Contracts

HEALTH FACILITIES RESEARCH CONSTRUCTION

NIH shares the responsibility of extending the countries' research base through its assistance in the construction and/or equipping of facilities for the sciences related to health. This is one of the many federal programs which have "provided unsurpassed material facilities for research in the physical and biological sciences. The splendid physical state of laboratories in the United States and of the instrumentation of these laboratories is largely the consequence of federal research funds."[1]

Although two of its Institutes made construction awards (amounting to a total of $22 million) between 1948 and 1952, NIH's main construction efforts began in 1956. The Health Research Facilities Act of that year authorized $30 million annually to provide, on an institution-wide basis, those facilities which universities and medical schools required to conduct effective research programs in the health sciences. In 1961 the level of authorization was raised to $50 million and the term "research facilities" was broadened to include research and related purposes, including training. Each grant is made on a matching basis, with NIH contributing not more than one-half the cost. Funds may be used only on the research portion of the construction. A grant may be small in amount, as for the completion of research laboratories and equipment at a nonprofit hospital or foundation; or, it may be so large as to support all research areas at a hugh medical center. To be eligible, an institution must be competent to conduct the type of health-related research for which it is designed, and must agree to continue to do so for at least a 10-year period.[2,3,4]

Over the seven and one-half years ending December 31, 1964, the Surgeon General approved grants to 990 projects amounting to almost $320 million. They were made to institutions in 50 states, the District of Columbia, and Puerto Rico.

Recently the size and complexity of health research facilities grants has grown tremendously. Whereas early grants were often limited to provision for improved laboratories for only a small group of scientists, the "trend is toward large-scale construction, often designed to house hundreds of scientists. Another development is requests for specialized research facilities such as radiation centers, biotrons, and high altitude chambers. Modern research equipment often requires special construction. These factors have vastly complicated the review of health research facility application." It was therefore considered advisable to establish a separate Scientific Review Committee for Health Research Facilities, April 1964.[5,6]

With the objective of strengthening the construction program along with other DRFR programs, the Division has recently developed an Office of Architecture and Engineering "to provide professional review and appraisal of research facility design and costs." The Office has developed guidelines and procedures with respect to documentation which must accompany each application together with that required at time of subsequent review. For the period January 1, 1963 through June 30, 1964, cost reductions resulting from Architecture and Engineering review amounted to more than $600,000.[5]

HEALTH SERVICES FORMULA GRANTS

Health services formula grants, like construction grants, are made by the Public Health Service on a matching basis. Requirements vary, but in most instances a grant is met with equal allocation of funds from a recipient's state or local government appropriation. Most of the PHS arrangements are made under auspices of the Divisions of the Bureau of State Services, but the National Institute of Mental Health approves health services formula grant awards for the conduct of state and local mental health programs, including mental health planning. These amounted to $5 million in fiscal year 1960, $6 million in 1961, $6 3/4 million in 1962, and $11 million both in 1963 and 1964, exclusive of NCI and NHI grants which have been transferred to BSS.

The recipient is a designated local department such as a state department of health, mental hygiene, hospitals, or of health and welfare. Funds to be allocatted are established by a formula which takes into account the population, the local per capita income, and the extent of the given problem in the state. To receive such an allotment, a state must submit and have approved by the Service its program and budgetary plans for the utilization of grant funds.[7]

RESEARCH CONTRACTS

Contracts are a recognized form of payment by NIH for the procurement of health-related research. At the present time they comprise but a small fraction of the total extramural budget. In fiscal year 1961, NIH made a total of 311 contracts costing over $23 million; in 1962, 415 contracts amounting to $28 million; and in 1963, 490 domestic and 6 foreign contracts, $38 million. During fiscal year 1964 the program increased again, to 585 domestic and 12 foreign contracts, $42.7 million.

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1 Kidd, Charles V. American Universities and Federal Research. The Belknap Press of Harvard University Press. Cambridge, Mass., 1959., pp. 14-15.

2 Hearings Before the Subcommittee of the Committee on Appropriations, U.S. Senate. Part II. Pursuant to H.R. 5888. 88th Cong., 1st Sess. U.S. Govt. Print. Off., Washington, D.C., pp. 1263-1267.

3 A Guide to Public Health Service Grants and Awards. PHS Publication No. 1061, pp. 12-14.

4 Serving Health Research. PHS Publication No. 1047. U.S. Govt. Print. Off., September 1963, p.3.

5 NIH. DRFR. Annual Report, January 1, 1963 - June 30, 1964. Mimeograph release. p. 4-5.

6 NIH. DRFR. Summary Statement by Chief., on Grants for Construction of Health Research Facilities. Material prepared in January 1964 as background information.

7 Public Health Service Grants and Awards, Health Services Formula and Project Grants, Part IV for each fiscal year. PHS Publications No. 964, 1079 and 1233. U.S. Govt. Print. Off., Washington, D.C.

If NIH research contracts are examined by Institute or Division of origin, 71 percent pertain to the National Cancer Institute. In fact, in fiscal year 1964, $20.9 million were allocated to contracts under the cancer chemotherapy program ($21.8 million in fiscal year 1963). Ten percent of NIH contract funds in 1964 were obligated by the National Institute of Allergy and Infectious Diseases; slightly less than 6 percent by the National Institute of Mental Health; about 3½ percent by the National Institute of General Medical Sciences, and 2½ percent by the National Institute of Neurological Diseases and Blindness.[1]

The Select Committee on Government Research of the House of Representatives, in its Study Number VII, presents a thorough analysis of contract policies and procedures for research and development in the Federal Government's various agencies. The report is focused to distinguish between contracts for research and development as contrasted with grants for research, as follows:

> "In general, the distinction is premised on this: that grants are used to support research which is largely basic in character and conducted principally in institutions of higher education. Grants are free from procurement requirements (e.g. competitive bidding and statutory regulations governing the way in which contracts are made) and do not contain the wordy clauses and conditions variously called 'boilerplate' or 'clauseology,' common conditions to Government covenants. Contracts may be used to support research which can be termed 'basic' in the light of the purpose, but contracts may also be used to sponsor and finance developmental and other activity along the whole spectrum of modern American science and technology which would be ineligible for grants."[2]

As NIH contracts grow in number and in dollar value, regulations concerning them assume increasing importance. The procurement manual of the Department of Health, Education, and Welfare sets forth the basic policy that negotiated purchases shall be on a competitive basis insofar as possible, and that proposals be obtained from three or more sources. Appropriate NIH personnel discuss the project with potential contractors, requesting qualified organizations or institutions to submit a formal proposal. This proposal is then reviewed by the NIH contracting office. NIH also requires that responsible panels of non-government advisers review such proposals, and that they present an evaluation of program needs and objectives. Once a contract is awarded, NIH project officers supervise and control its conduct, and, of course, are responsible for inspection and reporting. Most NIH contracts are written on a cost-reimbursement basis, and terminate at the expiration of the contract term.[3]

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1 Basic Data Relating to the National Institutes of Health, 1965 issue. Limited in quantity for administrative use. U.S. Govt. Print. Off., Washington, D.C., pp. 20-21.

2 Report of the Select Committee on Government Research, House of Representatives. Study No. VII. Contract Policies Procedures for Research and Development. 88th Cong., 2nd Sess. U.S. Govt. Print. Off., Washington, D.C., 1964, p. xi.

3 Ibid., pp. 26, 29, 33, 43, and 51.

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III THE REVIEW PROCESS AND ITS RESULTS

(a) Review Panels and Their Membership

(b) Type of Application and Amount Requested as Factors in Review Panel Recommendation for Approval and Level of Priority Score

(c) Low 10% Research Grant Applications

(d) Geographic Distribution of NIH Extramural Awards

(e) Growing Number of Domestic Sponsoring Institutions

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(g) Spreading the Impact of NIH Dollars Among Universities and Colleges

(h) Awards Through Contractual Arrangement, by Type of Institution

(i) Awards by Professional Orientation of Grantee Unit

(j) Origins of Scientific Manpower

(k) Mobility of Scientific Manpower

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III The Review Process and Its Results

All grant requests except those awarded according to formulas are in competition for funds under the Public Health Service's grant programs; applications for them must meet high technical and scientific standards. The review process is necessarily elaborate. For most of the programs, public advisory groups are relied upon to perform the tasks of review and appraisal. These groups, composed of highly qualified persons, consider applications in every aspect, and offer the Service the benefit of their collective judgment on specific topics.[1] Some activities are also financed by contractual arrangement.

(a) Review Panels and Their Membership

No better indication of program growth exists than that seen through a comparison of NIH's various advisory groups today with those ten years ago. In 1953, the Division of Research Grants listing of all advisory panels concerned with community services programs and with review of applications for research, training, and special control grants named 7 national advisory councils and 25 study sections including one training committee. At that time, 80 council members and 187 study section members were identified.[2] In 1963, the roster of PHS public advisory groups listed the following in NIH-connected capacity:[3]

With the exception of study sections which perform a PHS-wide function, most NIH advisory panels are structured by a specific Institute or Division, each of which has its own way of implementing a program and its special objectives. Membership is drawn from the various professions and is representative of persons interested in the biological, behavioral, and physical sciences from every part of the country. Most PHS public advisory groups are set up so that the members have definite terms of office.

Table 12
NIH Public Advisory Panels, and Nonfederal U.S. Membership of Each. Fiscal Year 1963

Advisory panel grouping	Number of panels	Number of members
Total	131	1,460
National advisory council	10	117
Scientific council	8	46
Study section	45	569
Training or training grants committee	27	309
Research career award committee	3	34
Program project or project grants committee	11	125
Resources committee	2	15
General clinical research center committee	1	16
Other technical committee	16	123
Board or panel	8	106

OCCUPATIONS OF PANEL MEMBERS

The occupational grouping of panel members is of interest. In 1963, 65 percent of national advisory council members but 81 percent of study section members were associated with an academic center. Almost 10 percent of study section members and 8 percent of council members were affiliated with a nonprofit research organization, with slightly smaller proportionate representation from hospitals. Over 4 percent of council members but less than 1 percent of study section members stemmed from business. (appendix table 32)

UNIVERSITY REPRESENTATION ON STUDY SECTIONS REVIEWING TRADITIONAL RESEARCH GRANTS

University faculty, comprising as they do some 80 percent of study section membership, shoulder a heavy responsibility in the decision making process. Whereas in fiscal year 1953 the average number of active NIH research grants per study section member was 11, that average had reached 28 grants per member in fiscal year 1963.

A high degree of objectivity in the process of technical and administrative review of applications for PHS research grants is assured to the scientific community by rules underlying procedures. It is required that recommendations of advisory groups be held in strict confidence by the participants. Moreover, a member of an advisory group is prohibited from participating in the review of any application submitted by his institution.

In order to test this objectivity, at the request of various authorities, a study was made several years ago to determine whether a study section shows different approval rates for grant applications sponsored by universities having membership on the review board as compared with grant applications sponsored by universities that are not so represented. The study was subject to a high degree of control inasmuch as analysis was

1 Condensation of introductory statement by Luther L. Terry, M.D., Surgeon General, Public Health Service. A Guide to Public Health Service Grants and Awards. PHS Publication 1061. U.S. Govt. Print. Off., Washington, D.C., 1963.

2 NIH. DRG. Past and Present Members of Public Health Service Advisory Panels. Draft for administrative use. April 1953.

3 Roster of Members of PHS Public Advisory Groups (Councils, Committees, Boards, Panels, Study Sections). PHS Publication 262A. U.S. Govt. Print. Off., Washington, D.C. Revised October 1963.

limited to the 20 universities which ranked highest in dollar funds awarded for NIH research grants fiscal year 1960. The main reason for this selection was the isolation of a group of academic centers relatively homogeneous for important institutional variables such as prestige, scope and quality of research facilities, professional status of faculty, and past research record. Each application from the 20 schools identified in the 1960 deck of key punch cards and pertaining to certain types of grants -- original (type 1) and continuation or supplemental (types 2, 3 and 9) -- was selected for study. In addition, the roster of members of advisory panels was consulted to determine the presence or absence of a member from the sponsoring institution on study section of review.[1]

Results of this study show that approval rates were relatively unaffected by the presence or absence of a "sample university-affiliated" study section member: 73 percent of 777 applications "with" representation, 72.6 percent of applications "without" representation merited a study section recommendation for approval. When attention was focused on results by university, differences were noted in rate of approval "with" and "without" representation. But for only one academic center, Harvard University, was there an apparent significant handicap for applications with sponsoring institution representation on the specific reviewing boards.

FAVORABLE COMMENT ON NIH REVIEW

The PHS system of review for traditional research grants has been commended by many distinguished committees. Findings of the group headed by Dr. Dean E. Woolridge have already been noted. Other examples may be cited.

In 1960 concensus of the Committee of Consultants on Medical Research was that "in the administration of the larger funds appropriated for the NIH, quality of the reviewing process and quality of research supported have been maintained at a remarkably high level. The chief facts which can be cited in favor of maintenance of a high quality of review are: (1) The quality of the reviewing groups has not changed. Members continue to be selected from among the most outstanding scientists of the country. (2) The standards by which the quality of research is judged have certainly not decreased. This Committee believes that these are rising steadily. (3) The percentage of approvals of new research grant applications has been essentially constant for the past 2 years, averaging 48 percent in amount and 60 percent in number, and showed no significant change in the November 1959 and March 1960 study section-council cycles..... It is the Committee's judgment that quality of research proposals approved has steadily increased. The research training which investigators have received in recent years as house officers, fellows, trainees, and assistants on research grants is showing results in research applications now coming to the NIH. Many of these demonstrate the investigator's thorough acquaintance with the subject field and competence to utilize the newest developments of instrumentation and technique, and there is no dearth of interesting and original ideas. As competence of applicants has increased, so has that of the reviewing scientists, and the Committee believes that standards by which the applications are judged have become more stringent."[2]

In 1964, the Chairman of the Subcommittee on Public Health and Safety, Committee on Interstate and Foreign Commerce, House of Representatives, reported upon results of a questionnaire survey of 19 institutions conducting biomedical research. Purpose of this Committee was to gain a better understanding of the relationship between PHS and these institutions, and to examine the impact of Federal grant programs upon them. The report comments upon faculty participation on PHS study sections and national advisory councils. Expression of opinion with regard to this review mechanism was requested. Those who replied "felt without exception that such advisory groups have made a significant contribution to the effective administration of NIH programs in that they have provided NIH with a high level of competence in making necessary appraisals without which it would not be able to carry out the processing of applications for public health awards and evaluating the results of research performed."[3]

The National Academy of Sciences Committee of Consultants on Medical Research submitted its report to the Committee on Appropriations, U.S. Senate, commenting: "The commitment of large public funds for support of basic research in universities has led not only to spectacular growth in the scope of scientific effort but also to advances in quality: American science has reached a position of world leadership. We attribute this in no small measure to enlightened policies of several federal agencies committed to furtherance of basic research; specifically to the current emphasis on support by research project grants and by fixed price research contracts (not too unlike grants), coupled with an extensive use of advisory scientific bodies, such as panels or study sections, to select scientifically meritorious projects for support."[4]

Again in 1964, the Select Committee on Government Research, House of Representatives, wrote: "To assure that direction and method of operation of grants and awards programs are in the national interest, NIH relies on advisory and consultative groups to the PHS. These groups consisting of some of the Nation's leading

1 NIH. OD. OPP. DAS. Program Analysis Report No. 12. Relationship of Study Section Recommendations for Approval and Disapproval to the Presence or Absence of University Representation on Study Section of Review. 20 Universities Leading in NIH Grant Awards, 1960. February 1963. See especially p. 11.

2 Report of the Committee of Consultants on Medical Research to the Subcommittee on Departments of Labor and Health, Education, and Welfare of the Committee on Appropriations. Federal Support of Medical Research. U.S. Senate. 86th Cong., 2nd sess., May 1960., pp. 27-28.

3 Report of the Subcommittee on Public Health and Safety. Committee on Interstate and Foreign Commerce. Impact of Public Health Grant Programs on Medical Research and Education. U.S. Congress. House of Representatives. U.S. Govt. Print. Off., August 1964, pp. 5-8.

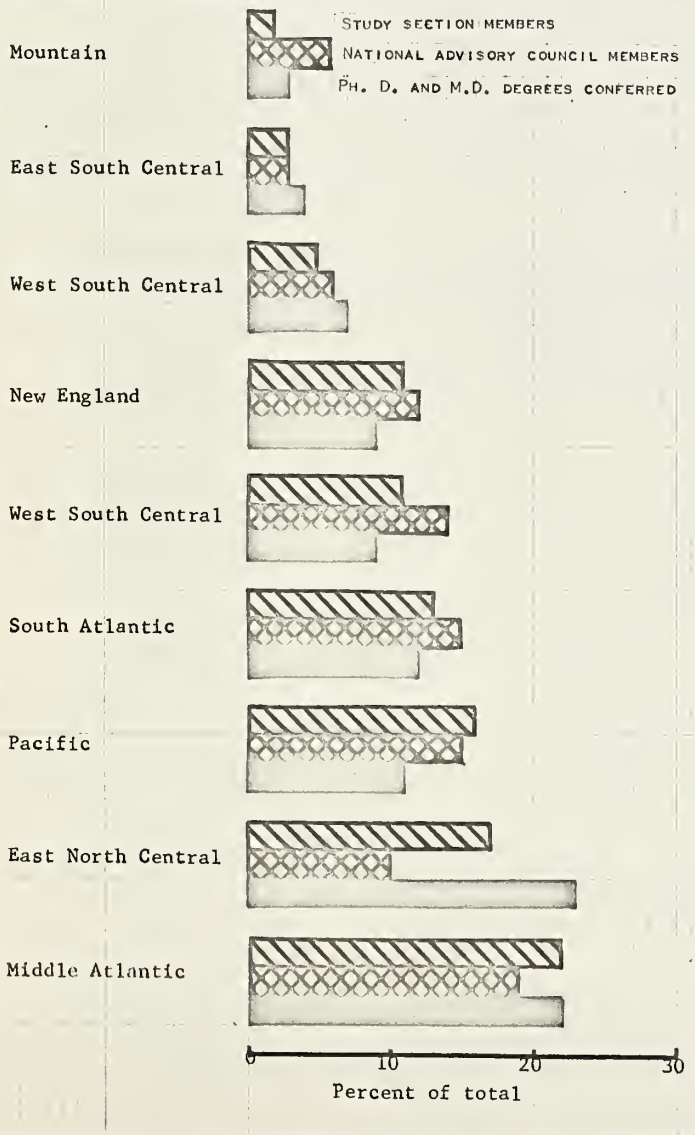
4 Report of the Committee on Science and Public Policy, National Academy of Sciences. Federal Support of Basic Research in Institutions of Higher Learning. National Academy of Science -- National Research Council, Washington, D.C., 1964, p. 1.

scientists and informed public-spirited citizens, provide study and advice inherent to the philosophy that NIH grants and awards programs are of and for the scientific community and in behalf of the people of the United States..... Their standards over the years have been kept uncompromisingly high.....The project system is the most flexible of fiscal arrangements permitting the Federal Government to utilize the talents of scientists. It permits each scientist to decide on extent of his commitment to governmental support by balancing his scholarly duties with his need for financial support of his research."[1]

GEOGRAPHIC DISTRIBUTION OF STUDY SECTION AND NATIONAL ADVISORY COUNCIL MEMBERS

The roster of members of PHS advisory groups was consulted each year in order to determine the geographic distribution of individuals selected to sit at study section and council meetings over the years. When percentage with home employment in each of the 9 geographic regions commonly demarcated in order to compute data for different sections within the U.S. is compared for the earlier years of the program as illustrated by 1953, and again for the more recent years as illustrated by 1963,some change is noted. Among study section members, percentage distribution did not change appreciably although percentage representation from New England dropped slightly as did that for East North Central, while that for the West North Central and Pacific divisions increased. Change in distribution among council members was more noticeable, with marked decrease in representation from the Middle Atlantic, East North Central and East South Central divisions, but increase in that for portions of the country encompassed by the West North Central, South Atlantic, West South Central, and Pacific divisions. (appendix tables 33, 34)

Figure 11
DISTRIBUTION OF
NIH STUDY SECTION AND NATIONAL ADVISORY COUNCIL MEMBERS
BY PLACE OF U.S. EMPLOYMENT, 1963 and
Ph. D. and M.D. DEGREES CONFERRED IN THE U.S.,1961-1962,
FOR EACH GEOGRAPHIC DIVISION



Inasmuch as 81 percent of the membership of study sections and 65 percent of that of national advisory councils stem from institutions of higher education, it is appropriate to compare the distribution of Ph. D. and M.D. degrees conferred throughout the country in the academic year 1961-1962 with that of place of home employment of panel members, as shown in figure 11. (appendix table 35) With the exception of the East North Central division comprising Ohio, Indiana, Illinois, Michigan and Wisconsin, proportions for each of the three components are fairly comparable. In this one instance, Ph. D. and M.D. degree representation is proportionately high in contrast to that of national advisory council membership in particular, but also that of study section membership.

Nonetheless, a few years previously, the East North Central Division was highly represented by panel members. Moreover, in the study mentioned earlier on approval rates for 20 universities in 1960, University of Wisconsin was accorded approval for an equal percentage of applications "with" and "without" study section representation at time of review. In the case of the University of Illinois, approval rate "without" representation surpassed that "with" representation, as was also

1 Report of the Select Committee on Government Research. Under the authority of H. Res. 504, as amended by H. Res. 810. Contract Policies and Procedures for Research and Development. Study No. VII. House of Respresentatives. U.S. Govt. Print. Off., Washington, D.C., 1964, pp. 114 and 117.

the case with the University of Michigan. For both state systems, some 9 percent more applications were approved by panel action on the part of a group lacking home membership than for applications which had representation from the university on the review board. Purdue University, not represented among the leading 20, earned 79 percent approval "with" study section representation, but 100 percent approval "without" such representation. (appendix table 35)

(b) Type of Application and Amount Requested as Factors in Review Panel Recommendation for Approval and Level of Priority Score

A complete population of 2,751 domestic research grant applications reviewed at one round of study section meetings, January-February 1961, was analyzed to better understand the relationship of an application's approval and its level of priority score to certain nonscientific attributes of the research proposal.[1] In another early study, 3,926 "approved" research grant applications sponsored by 302 academic institutions and recorded on fiscal year 1960 key punch cards were likewise analyzed.[2] Recently, initial review group decisions forwarded to March 1964 national advisory council meetings were studied.

AMOUNT REQUESTED, BY TYPE OF APPLICATION (two early studies)
For the 2,751 proposals, the rate of approval for new research grant applications was lower than that for competing continuation or supplement grant applications. Moreover, for new grants the approval rate was highest when the smallest amounts were requested, and it diminished progressively as larger sums were suggested. This pattern was not clear for competing continuation and supplement grant requests, as shown in table 13.

Level of median priority score for approved new grants was remarkably similar to that for competing continuation grants by dollar size group. In each instance the distinguishing feature of priority score ratings is the favorable priority level of approved applications in the amount of $40,000 or more. The small proportion of applications recommended for approval at sizable amounts implies rigid screening of such proposals; excellent priority scores attached to most of the applications which do survive indicates high order of importance in the opinion of members of the review group. (appendix table 36)

Table 13
Approval Rate and Median Priority Score, by Type of Research Grant and Amount Requested
January-February 1961 Study Sections. Applications from U.S. and Possessions

Amount requested per application	Approval rate			Median priority score		
	New grants	Competing continuation grants	Supplement grants	New grants	Competing continuation grants	Supplement grants
All amounts	51.7	80.9	79.4	260	253	220
Less than $10,000	54.4	80.3	83.2	270	262	214
10,000 - 19,999	55.5	79.6	75.7	262	264	231
20,000 - 29,999	53.9	81.0	75.9	258	254	228
30,000 - 39,999	42.9	89.7	64.3 1/	258	236	254 1/
40,000 and over	39.0	78.3	78.3	223	210	162
Number of applications	1,895	565	291	1,895	565	291

1/ Only 14 applications approved in this group.

This observation confirms results of an earlier study--that of 3,926 approved applications submitted by principal investigators sponsored by 302 institutions of higher education in the U.S. and included in the listing of research grants funded in fiscal year 1960 (having been reviewed at three different rounds of study section meetings). When these applications are grouped in eight categories of priority score, the favorable priority rating accompanying approved applications in request of larger amounts is again clear. Mean amount requested was $24,052 for 310 applications accorded a priority score of 100-149; $17,055 for 641 applications with a score of 150-199; $16,807 for 1,001 applications with a score of 200-249; and descended progressively to $14,146 for 281 applications with score of 350-399; $11,548 for 84 with 400-449; $8,333 for 12 applications scoring 450 or more. (appendix table 37) When 8 applications in request of $100,000 or more each are eliminated from the group of 310 in the 100-149 priority score group, the mean amount requested for the remaining 302 applications is $20,199.

AMOUNT REQUESTED, BY TYPE OF GRANTEE INSTITUTION (two early studies)
It is noteworthy that 118 applications from among the 3,926 in this earlier study, each in request of $50,000 or more, stemmed from 48 academic centers. About three-fourths of the funds requested from the 118 were attributable to principal investigators sponsored by a college or a university with a ratio of less than

1. DRG. SAB. SSS. Tables comprising an analysis of Approval Rate and Median Priority Score of Applications Reviewed at January -February 1961 Study Section Meetings, According to Nonscientific Attributes of Applications. Prepared May 1964.
2. DRG. SAB. SSS. Attributes of Institutions of Higher Education Reflected in Priority Score Ratings of Approved NIH Research Grant Applications Funded Fiscal Year 1960. Prepared September 1964.

9 students to faculty member. Moreover, nine-tenths of the funds requested for the group of 118 applications were for grants sponsored by schools with an enrollment of 5,000 or more during the academic year 1958-1959. Of the 48 universities and colleges, only 12 were without a medical school in the academic complex.

In the study of 2,751 research grant applications reviewed January-February 1961, the most outstanding median priority score for a category within the academic group was attached to 73 approved applications sponsored by university "with" a medical school, each in request of $40,000. (appendix table 38) These requests were mainly sponsored by schools with an enrollment of 10,000 or more. (appendix table 39) The best approval rate and median priority score accorded to applications sponsored by governmental authorities, and again for applications sponsored by research institutes and other organizations was in request of small amounts, falling into the category $20,000-29,999. (appendix tables 38,39)

AMOUNT REQUESTED, BY CHARACTERISTICS OF PRINCIPAL INVESTIGATOR (January-February 1961 study sections)
Men and women under 30 years of age requested small amounts of money, with most asking for less than $20 thousand. Study section members tended to encourage young researchers who, at every dollar level, achieved an approval rate in excess of that of older applicants. At $10,000-19,999 they also scored most favorable levels of priority, as shown by the median. (appendix table 40)

Generally, for each dollar value, the percentage of "approved" applications decreased as age of principal investigator increased. However, a low approval rate sector was sometimes matched by outstanding median priority score among the survivors.

Applications from principal investigators with either a Ph. D. or an M.D. comprised 90 percent of the sample of new grants from the U.S. and Possessions. In each instance, the approval rate diminished with an increase in amount of request, but at each dollar interval the approval rate for Ph. D.'s was higher than that for M.D.'s. (appendix table 41) The outstanding median priority score was attached to Ph. D. applications in an amount of $40,000 or over.

INITIAL REVIEW GROUP DECISIONS FORWARDED TO MARCH 1964 NATIONAL ADVISORY COUNCILS
Data shown in table 14 reflect approval rates and level of median priority score for research grant applications considered by initial review groups (study sections, committees, and project committees) for consideration at the March 1964 national advisory council meetings. It will be noted that approval rates for new applications in request of $30,000 or more were somewhat higher than they had been four years earlier, while approval rates for renewals were somewhat lower at the later date. Median priority scores by dollar request category were less favorable in 1964 than in 1961. (appendix table 42)

Table 14
Approval Rate and Median Priority Score, by Type of Research Grant and Amount Requested
Initial Review Groups for March 1964 Council.
Applications from U.S. and Possessions

Amount requested per application	Approval rate			Median priority score		
	New grants	Competing continuation grants	Supplement grants	New grants	Competing continuation grants	Supplement grants
All amounts	50.9	73.2	81.6	266	262	233
Less than $10,000	56.7	72.3	87.8	280	266	228
10,000 - 19,999	54.1	72.4	76.8	277	270	235
20,000 - 29,999	51.3	72.0	82.0	254	267	253
30,000 - 39,999	48.3	75.9	66.7	268	262	200
40,000 and over	44.6	74.5	75.7	252	237	227
Number of applications	2,226	816	304	2,226	816	304

TRAINING GRANT APPROVAL RATES
Training grant approval rates show a consistent pattern of being higher than those for research grants, with at least two-thirds of new proposals and at least nine-tenths of renewals approved each fiscal year 1962, 1963, 1964. However, funds available present a greater problem in the case of NIH Training Grant Awards than NIH Research Grant Awards.

(More to be written)

(c) Low 10% Research Grant Applications

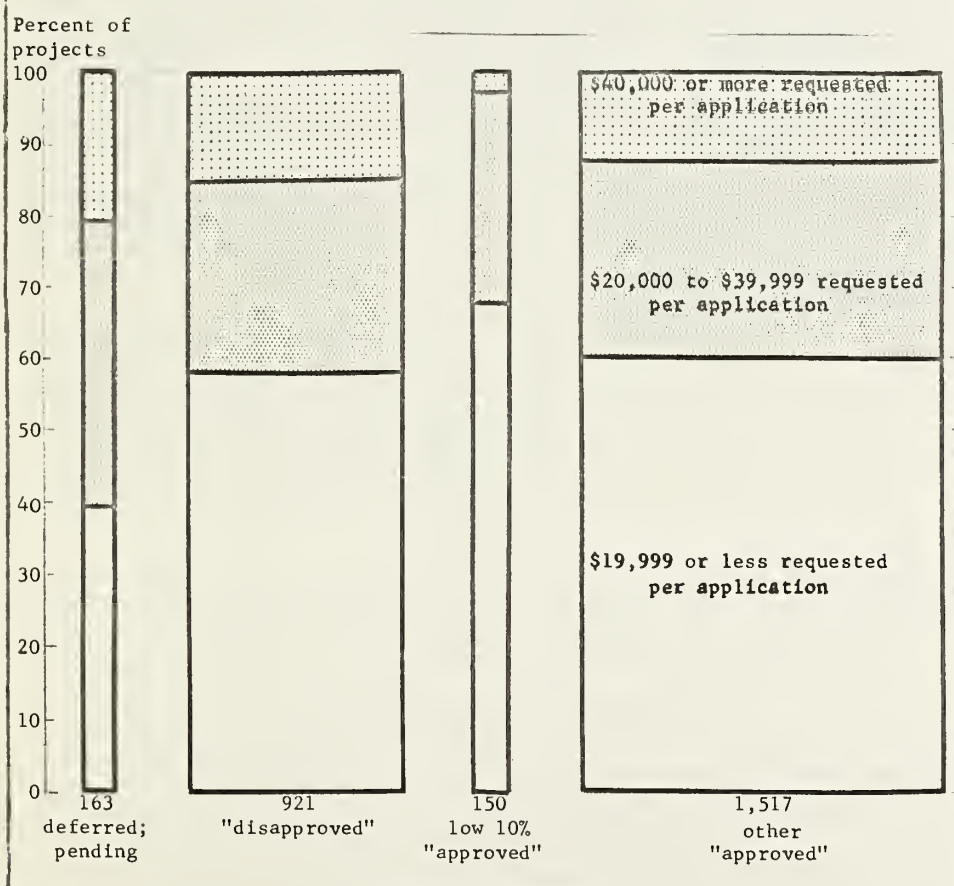
Evaluation of nonscientific attributes of 150 of the 2,751 NIH research grant applications reviewed at January-February 1961 study section meetings, each falling within the low 10% of priority scores assigned by a study section at that time, was made in contrast to similar attributes for applications meeting with other recommendations.[1]

JANUARY-FEBRUARY 1961 STUDY SECTION RECOMMENDATIONS

Distribution of characteristics of the 150 applications was comparable, in many respects to that of 1,517 other "approved" proposals. This was true, for example, of proportionate distribution of the 150 and again of the 1,517 by national advisory council of review, by state of origin, and by type of sponsoring institution. It was also true for selected characteristics of the principal investigators submitting the research grant proposals--as measured proportionately by age, higher degree held, and salary budgeted from NIH research grants.

Figure 12

DISTRIBUTION OF NIH RESEARCH GRANT PROPOSALS, BY AMOUNT REQUESTED FOR EACH CATEGORY OF STUDY SECTION RECOMMENDATION. APPLICATIONS FROM U.S. AND POSSESSIONS JANUARY-FEBRUARY 1961 STUDY SECTIONS



OUTSTANDING CHARACTERISTICS

A feature of low 10% applications was their inclusion of few supplement grants (only 7). Another attribute was their concentration of requests at amounts of $19,999 or less (figure 12). By way of contrast, requests for $40,000 and above were made by 3 percent of the low 10% group, 12 percent of the other approved group, 15 percent of "disapprovals," and 16 percent of deferred applications at this round of meetings.

More than two-thirds of low 10% applicants submitted requests for $19,999 or less. Investigators submitting these applications held less responsible positions, on the whole, than did other groups of principal investigators. An appointment as full or associate professor, director, supervisor, chief, dean, or department head at the sponsoring institution was held by 59 percent of applicants with high priority scores, 57 percent of those with action deferred, 56 percent of those with recommendation for disapproval, and 51 percent of the 150 whose proposals met with a poor priority rating. (appendix table 43)

MOST UNFAVORABLE COMMENT PER APPLICATION

The nine unfavorable comments which appeared most frequently were extracted from study section minutes for the 150 applications, and that comment most representative of a proposal was earmarked.

Two-thirds of the applications were for new research projects. These were largely criticized on the ground of lack of originality, an excessive budget request of one sort or another, diffuseness, or inadequate methods

1 NIH. DRG. SSS. Applications Submitted for Review and Falling Within the Low 10% Priority Group. January-February 1061 Study Section Meetings. Draft of September, 1964.

and techniques proposed. The remaining applications, known as competing continuation grants in that the principal investigator was asking for funds to further a research project previously funded by NIH, were most often criticized on the grounds "past record of applicant on this or other projects appears inadequate." Of second highest importance in criticism of on-going projects (renewals) among the low 10% was "scientific or statistical approach or techniques appears inadequate."

PREVIOUS NIH EXTRAMURAL SUPPORT OF APPLICANTS

It is worthwhile to take into consideration the past experience of low 10% applicants with regard to NIH extramural program support. The poor priority ratings of their proposals would lead one to guess that the principal investigators were new to such support. In effect, this was true of only about one-third of the group.

Records revealed that 96 of the 150 principal investigators had had previous NIH extramural program support. In some instances this included earlier awards for research requiring continuation or supplement funds in 1961. Although some had worked with limited amounts of money in the past, others had handled considerable funds over the years: 1 in the $93 thousands; 15 in the $100, 2 in the $200, and 3 in the $300 thousands; and 2, even, at more than $500,000.

Cross tabulation of most unfavorable comment per application is relevant. Among the low 10% group, principal investigators lacking earlier exposure to NIH-funded programs showed greater evidence, proportionately, of inability to select original proposals based on a probable hypothesis than did other applicants. Those with earlier exposure, however, had greater difficulty demonstrating their proficiency. Past productivity was not considered to have been noteworthy; present approach was often lacking in sound scientific and/or statistical techniques and methods (in the opinion of study section of review).

Table 15
Previous Awards by NIH to Principal Investigator
Low 10% Priority Score Group
Among Applications from U.S. and Possessions
January-February 1961 Study Section Meetings

Total amount of previous NIH awards	Number of principal investigators: Previous support including that for this research project	Previous support excluding that for this research project
Total	150 [1]	150 [2]
None	54	72
$29,999 or less	40	37
$30,000-$59,999	27	20
$60,000-$89,999	6	6
$90,000 or more	23	15

1/ Range: $2,300 to $554,852.
2/ Range: $2,300 to $535,235.

ENCOURAGEMENT OF MARGINAL APPLICANTS

The most favorable comment concerning each low 10% application was also extracted from study section minutes. Foremost among these were:

	Number of applications, by type: New	Competing
Research is needed in this area; possibility of new results	27	11
Support is desirable for young or deserving scientist, laboratory, or school	22	4
Approval recommended for limited period, to evaluate or to terminate project proposal	17	16
Applicant or research team well trained, past productivity good	16	2

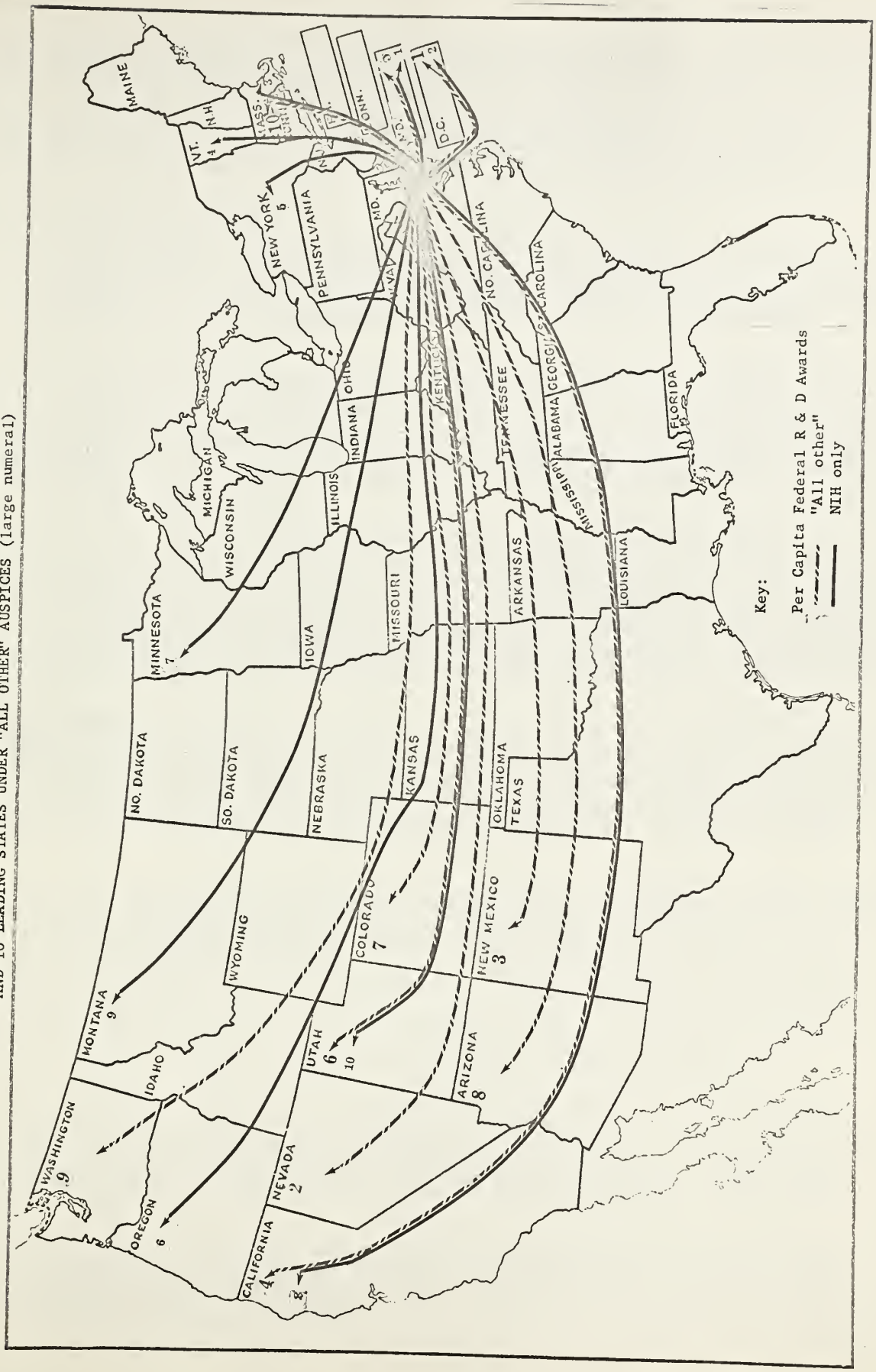
Inasmuch as most low 10% proposals were modest with respect to funds requested, benefits which might have accrued through NIH funding of these proposals might be measured against those realized from one or two of the most elaborate research projects. Superficially it would seem that low 10% teams were in need of direction from superior, experienced researchers. Were it possible to give them research experience through official ties to a well established research program in their home communities, they might contribute more than they would acting on their own. The study section comments which appeared more frequently, whether critical or laudatory, served to delimit the scientific potential of low 10% research grant proposals and only occasionally related to a nonscientific attribute of the application.

JANUARY-FEBRUARY 1964 INITIAL REVIEW GROUP RECOMMENDATIONS

In order to test the validity of results derived from analysis of study section review of one sample of research grant applications, a second sample was tried. It was made up of applications forwarded to initial review groups (study sections, committees, and program project committees) which forwarded decisions to March 1964 national advisory councils. Included in proposals reviewed by committees were many large grants, some of which would have been the responsibility of study sections in earlier years.

In this instance, 3,346 applications were considered, 179 falling within the low 10% group. Once again, the number of supplement applications among the low 10% was small (only 7). And, as in the previous sample, those in request of $19,999 or less accounted for the largest proportion of the 179. However, the proportion of the 179 applications in request of $30,000-39,999, and of $40,000 or over, exceeded that in the 1961 sample. This might be expected in view of recent innovations whereby more requests are submitted for large NIH grants. By definition, when any initial review group recommends as few as 10 applications for approval, 1 of the 10 must fall into the low 10% category. (appendix table 44)

Figure 13
PER CAPITA FEDERAL R & D AWARDS, FISCAL YEAR 1963
10 LEADING STATES IN AWARDS UNDER NIH AUSPICES (small numeral),
AND 10 LEADING STATES UNDER "ALL OTHER" AUSPICES (large numeral)



An interesting comparison has been made between per capita R & D obligations for NIH and for "all other" federal agencies, by State.[1] When the 10 leading states are identified under each classification, Maryland, the District of Columbia, California, Massachusetts, and Utah are included under both. However, the remaining 5 among the leading NIH states are New York, Minnesota, Montana, Vermont and Oregon which rank 18, 30, 36, 38, and 43 respectively among "all other" federal agencies. Included in the leading 10 among the "all other" group are Washington, Colorado, New Mexico, Arizona and Nevada which rank 13, 15, 42, 43, and 50 respectively for per capita NIH R & D funds. Figure 13 shows the 10 states leading in per capita R & D funds under each group. The smaller number (used to indicate rank) and the solid black line represent the NIH component.

UNIVERSITIES CONFERRING HIGHER DEGREES

The trend in distribution of NIH extramural funds to institutions of higher education conferring M.D. and Ph. D. degrees by state from 1954 to 1962 shows the largest proportionate increase to have taken place in California, New York, and Texas, the largest proportionate decrease to have taken place in Massachusetts and the District of Columbia. M.D. and Ph. D. degrees are a legitimate yardstick of research potential at educational institutions inasmuch as an institution which confers these degrees must probably have faculty and facilities for scientific research.[2]

In figure 14, comparison is made between proportionate allocation of M.D. and Ph. D. degrees conferred and of NIH extramural dollar awards under four programs by state, fiscal year 1962. Sixteen states and the District of Columbia each accounted for at least two percent of the national total of M.D. and Ph.D. degrees conferred that year. For seven of the states, the percentage of NIH funds to institutions which conferred these degrees exceeded the percentage of degrees: New York, California, Massachusetts, Missouri, North Carolina, Maryland, and Minnesota. For nine states and the District of Columbia it was less: Illinois, Pennsylvania, Michigan, Ohio, Indiana, Texas, Wisconsin, Iowa, and Tennessee. This relationship had also existed for the same states, except for New York, in 1954.

When NIH dollars to a given state are divided by number of Ph. D. and M.D. degrees conferred in that state, a dollar average of funds per degree is attained. This amount is shown in the left hand column of figure 14, together with the rank of that state. States with a favorable rank (beginning with 1) are often those with small number of degrees conferred. Thus high rank is not necessarily identified with industrialized areas; to the contrary, it is often found among sections of the country which are agricultural. Nor is this rank related to size of extramural funds to each state. While earned degrees and NIH award dollars are larger to industrial states where research facilities and manpower are concentrated, funds directed to sections of the country where new graduate schools are gaining recognition are often large in relation to degrees conferred. (appendix table 53)

FUNDS TO OTHER SPONSORING INSTITUTIONS

It is noteworthy that both in fiscal year 1954 and 1962, distribution of domestic funds under selected NIH extramural programs separated into four-fifths (universities conferring the M.D. and/or Ph. D.) and one-fifth (all other U.S. sponsoring institutions including universities and colleges which did not confer an M.D. or Ph. D.). The latter show a tendency to concentrate in a few states. In 1954, 58 percent and in 1962, 55 percent of these funds were awarded in New York, California, and Massachusetts. An additional 20 percent each year went to Illinois, Pennsylvania, Ohio and the District of Columbia.

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1 NIH. DRG. SAB. OSS. Federal Research and Development Funds Obligated and Obligations Per Capita--Extramural and Intramural--by Geographic Divisions and States, Fiscal Year 1963.

2 DHEW. OE. Earned Degrees Conferred 1953-1954; also, OE.-54013-62. Earned Degrees Conferred 1961-1962.

Note: During the academic year 1961-1962, 194 institutions of higher education in the U.S. conferred the doctorate or its equivalent upon 11,620 individuals. "Approximately nine-tenths of these degrees were conferred in the following major areas of study: physical sciences, 18.3 percent; education, 16.3 percent; social sciences, 11.7 percent; biological sciences, 11.5 percent; engineering, 10.4 percent; psychology, 6.7 percent; English and journalism, 4.2 percent, agriculture, 3.6 percent; and mathematics, 3.4 percent." In addition, schools of medicine conferred 7,138 M.D. degrees at this time.

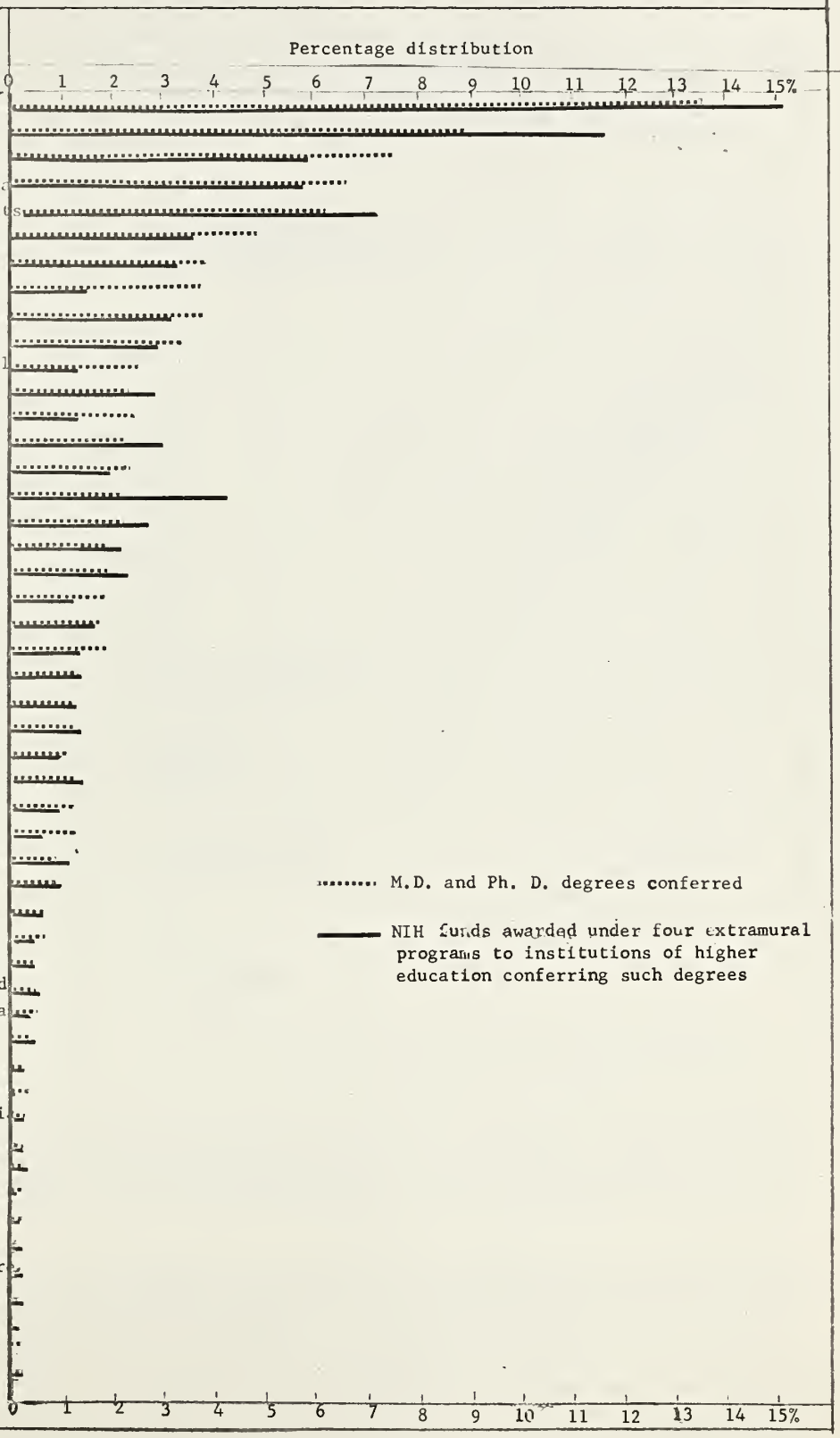
In all, then, 18,758 students earned the M.D. or Ph.D. degree in 1961-1962. Among them, 18,597 attended 161 institutions of higher learning which were in receipt of NIH extramural awards under one or more of the research grant, training grant, health research facilities or fellowships-traineeships programs that year. In fact, of some $537 million awarded in the U.S. under the four programs, four-fifths was allocated to the 161 academic centers, fiscal year 1962. (About 33 institutions of higher education conferred the Ph. D. 1961-1962 but did not receive an NIH extramural award, chiefly schools of theology.)

When this experience is compared with that for the earlier period, fiscal year 1954, although the number of institutions conferring the Ph. D. and/or M.D. degree was smaller as was the amount of NIH funds awarded to U.S. recipients under three extramural programs, 78 percent of such funds went to 118 universities which conferred 15,707 degrees.

Figure 14

DISTRIBUTION OF M.D. and Ph. D. DEGREES CONFERRED and of NIH FUNDS AWARDED UNDER FOUR EXTRAMURAL PROGRAMS TO INSTITUTIONS OF HIGHER EDUCATION CONFERRING SUCH DEGREES SHOWING AVERAGE NUMBER OF NIH DOLLARS PER DEGREE EARNED, and RANK, BY STATE FISCAL YEAR 1962

Average number NIH dollars per degree earned		State
Rank	Amount	
20	$25,329	New York
12	29,922	California
34	17,715	Illinois
27	19,619	Pennsylvania
13	29,397	Massachusetts
37	16,556	Michigan
30	18,639	Ohio
46	9,258	Indiana
28	19,585	Texas
32	18,199	Wisconsin
45	11,482	Dist. of Col
19	25,785	Missouri
44	11,509	Iowa
14	29,341	No Carolina
29	19,123	Tennessee
4	43,922	Maryland
17	27,562	Minnesota
18	26,601	Connecticut
10	32,539	Louisiana
39	15,365	New Jersey
26	21,264	Florida
38	16,223	Colorado
8	38,700	Washington
25	21,902	Virginia
21	24,403	Oregon
36	16,875	Kansas
16	28,063	Georgia
31	18,055	Oklahoma
43	12,334	Nebraska
9	34,253	Utah
22	23,442	Kentucky
24	23,008	Alabama
40	14,906	Arkansas
23	23,240	Mississippi
15	28,596	Rhode Island
42	12,696	So. Carolina
7	41,184	Vermont
33	18,098	Arizona
49	2,306	New Mexico
6	41,239	West Virginia
11	31,695	Montana
3	54,549	No. Dakota
48	3,506	Wyoming
47	4,634	Delaware
1	297,736	Hawaii
35	17,696	New Hampshire
2	58,502	So. Dakota
41	13,086	Idaho
no NIH funds		Alaska
5	43,099	Maine
no Ph.D. or M.D.		Nevada



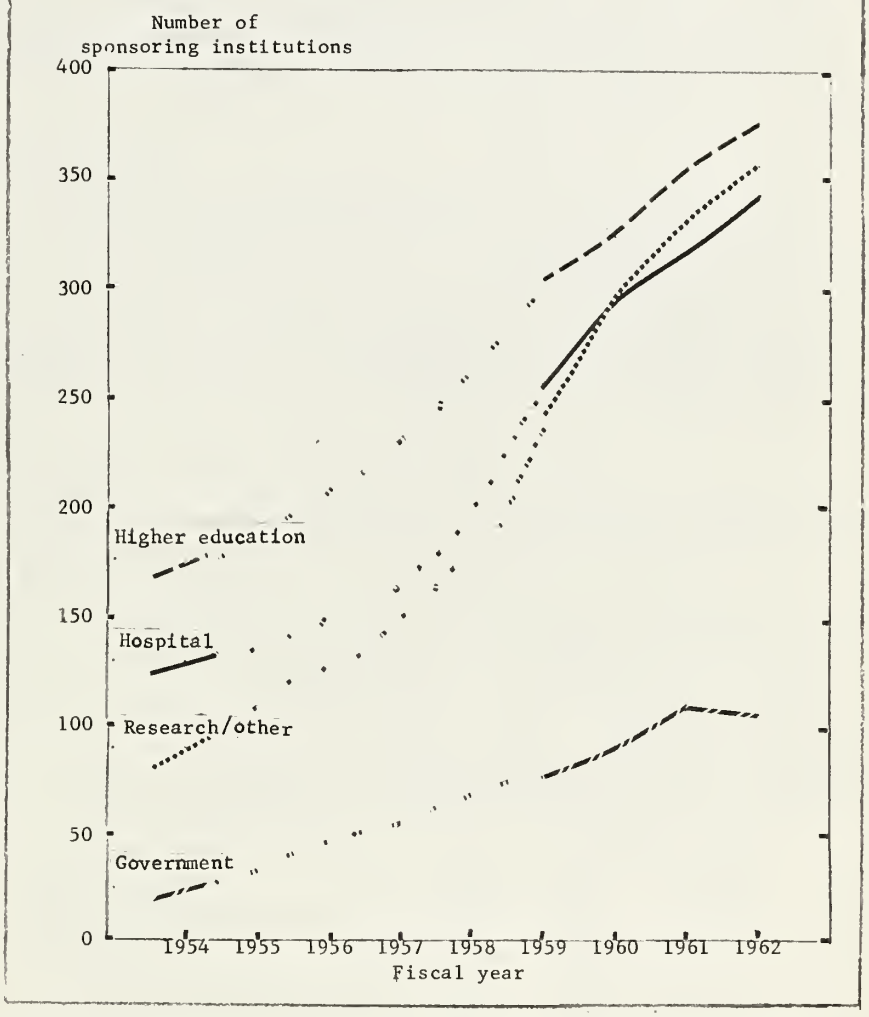
(e) Growing Number of Domestic Sponsoring Institutions

NIH, as a spearhead of medically related research, naturally turns to universities which include a medical school and a hospital as well as sophisticated departments of science and engineering within their complex. NIH sponsored research and training programs have taken on importance, too, at nonacademic centers, as, for instance, the research components of voluntary and state controlled hospitals, and the many distinguished nonprofit research institutes and laboratories within the U.S.

INSTITUTIONS BY TYPE

Grantee institutions rose from 420 in 1954 to 1,172 in fiscal year 1962. This increase is shown by type of institution in figure 15.

Figure 15
SPONSORING INSTITUTIONS UNDER FOUR NIH EXTRAMURAL PROGRAMS, BY TYPE. UNITED STATES AND POSSESSIONS, FISCAL YEARS 1954-1962.



Today, approximately equal numbers of sponsoring institutions fall into three separate categories, each accounting for some 30 percent of the total: higher education (including hospitals owned by a university or medical school); hospitals which are not academically owned; and research institutes and other health related organizations. The residual, comprising some 10 percent of the total, consists of agencies or departments at various levels of government--largely state, county or city--but some federal (excluding universities or hospitals under governmental auspices). (appendix table 54)

Leading institutions of each type are presented in descending order of magnitude of NIH awards under four extramural programs, fiscal year 1962 in appendix tables 55, 56, 57, 58. Funds to each institution are specified by program. Some descriptive material is also given. (Data exclude health services formula grants and health research contracts).

NONACADEMIC SPONSORS

Greatest proportionate increase has taken place among governmental agencies. In fiscal year 1954, 24 such units were in receipt of NIH awards amounting to some $\frac{1}{2}$ million. By 1962, 105 governmental units were NIH grant recipients, receiving more than $13 million under programs other than NIMH-funded health services formula grants which went to each state. (appendix table 59) Expressed in another way, whereas in 1954 only 10 states and the District of Columbia contained governmental agencies sponsoring NIH awarded research grants, training grants or trained individuals who had earned a fellowship or traineeship; in 1962 only 10 states were without such a grant to a governmental unit; by fiscal year 1964, all states were in receipt of such an award and, in addition, a health research facilities construction award.

Hospital grantee institutions increased from 128 to 340, and research institute/other institutions from 93 to 353 over the period 1954 to 1962. NIH funds under four extramural programs to each group of institutions amounted to some $3.7 million in fiscal year 1954, but had risen to $51.6 million for hospitals and $40.7 million for research institute/other organizations by 1962. (appendix tables 60,61)

The figure 340 slightly underestimates the number of hospitals contributing to NIH extramural program effort inasmuch as a hospital may be the site of research or training activated through an award to a sponsoring institution of higher education or to a governmental agency. A majority of the hospitals, 221, are under voluntary (nonprofit) control. Two are owned by a corporation for profit. The rest are public: 76 State; 12 Federal; 12 County; 12 City; and the remainder under a combination of local governmental auspices.

Included among the research institute and other group are a wide variety of health-related organizations which submit applications for and are in receipt of NIH extramural program awards. Representation reaches from the finest research institutes and laboratories in the U.S., to industrial research laboratories (non-profit); well known voluntary health agencies; associations and technical societies; outpatient clinics; schools for the mentally retarded; other welfare and health oriented facets indigenous to this country.

Increasing program scope under existing authority, and new programs visualized under legislation proposed, may raise the number of U.S. hospitals, research institutes, and community facilities in receipt of NIH extramural awards. As one example, the hospital improvement program (NIMH) "to provide support for demonstrations of improved methods of care, treatment, and rehabilitation of the mentally ill and mentally retarded" is expected to reach 74 new institutions in 1966. As another, proposals under consideration in a resolution of the National Heart Institute Advisory Council recently forwarded to the Surgeon General include the establishment of new centers of research activity in the cardiovascular field "to include coordinated researchers in the various clinical and basic scientific disciplines," and again, the "establishment of other coordinating centers, including central laboratories for the cooperative study of drugs and coronary heart disease." Further long-term NIH objectives envision special resources such as "scientific and technical information centers for expanded service in the communication of biomedical information; specialized animal research resources; and additional capabilities in the fields of computation and data processing, biomedical engineering, and biomathematics."[1]

INSTITUTIONS OF HIGHER EDUCATION LEAD IN NIH AWARDS

Despite the many nonacademic outlets for NIH extramural program objectives, institutions of higher education are the main sponsors of NIH research and training. In 1954, 175 universities and colleges were in receipt of one or more NIH extramural awards. By fiscal year 1962, the number had increased to 374, with all branches of a university system considered as "one" unit; e.g., campuses at different geographic locations, various medical and other health-related schools; departments and divisions; university owned hospitals and outpatient clinics; laboratories; centers; institutes. Importance of universities with medical schools and hospitals as the natural place for medically related research and training is evidenced by figure b which depicts funds awarded under four NIH programs according to type of grantee institution, fiscal year 1954, and again in each fiscal year 1959 through 1962. It is readily seen that from one year to another funds to institutions of higher education exceeded total funds to all types of sponsoring institutions for the preceeding 12-month period.

(f) Distribution of NIH Extramural Funds by Type of Sponsoring Institution

Despite the importance of schools of higher education in the NIH extramural award distribution, it should not be assumed that only academic centers occupy a top position with respect to program awards. Moreover, the spectrum of sponsoring institutions is growing appreciably.

200 LEADING INSTITUTIONS

When the 200 U.S. sponsoring institutions leading in total NIH awards are identified, they represent 17 percent of grantee institutions fiscal year 1962. Included are 116 universities or colleges, 45 hospitals, 30 research/other, and 9 government organizations. Most are well established grantees who had been conducting NIH sponsored training and research projects for some time. In fact, 168 among the 200 had also been the recipient of one or more NIH awards as early as fiscal year 1954, representing 42 percent of sponsoring institutions that year. Only 32 of the 200 had been without an award in 1954 (5 academic, 8 hospital, 4 governmental and 15 miscellaneous institutions).

Table 17 shows the distribution of funds to the 200 leading grant recipients, and to the remaining sponsoring institutions which numbered 972 in fiscal year 1962. The 200 received 91 percent of NIH extramural funds under four programs; the 972 received 9 percent of the funds.

Table 17

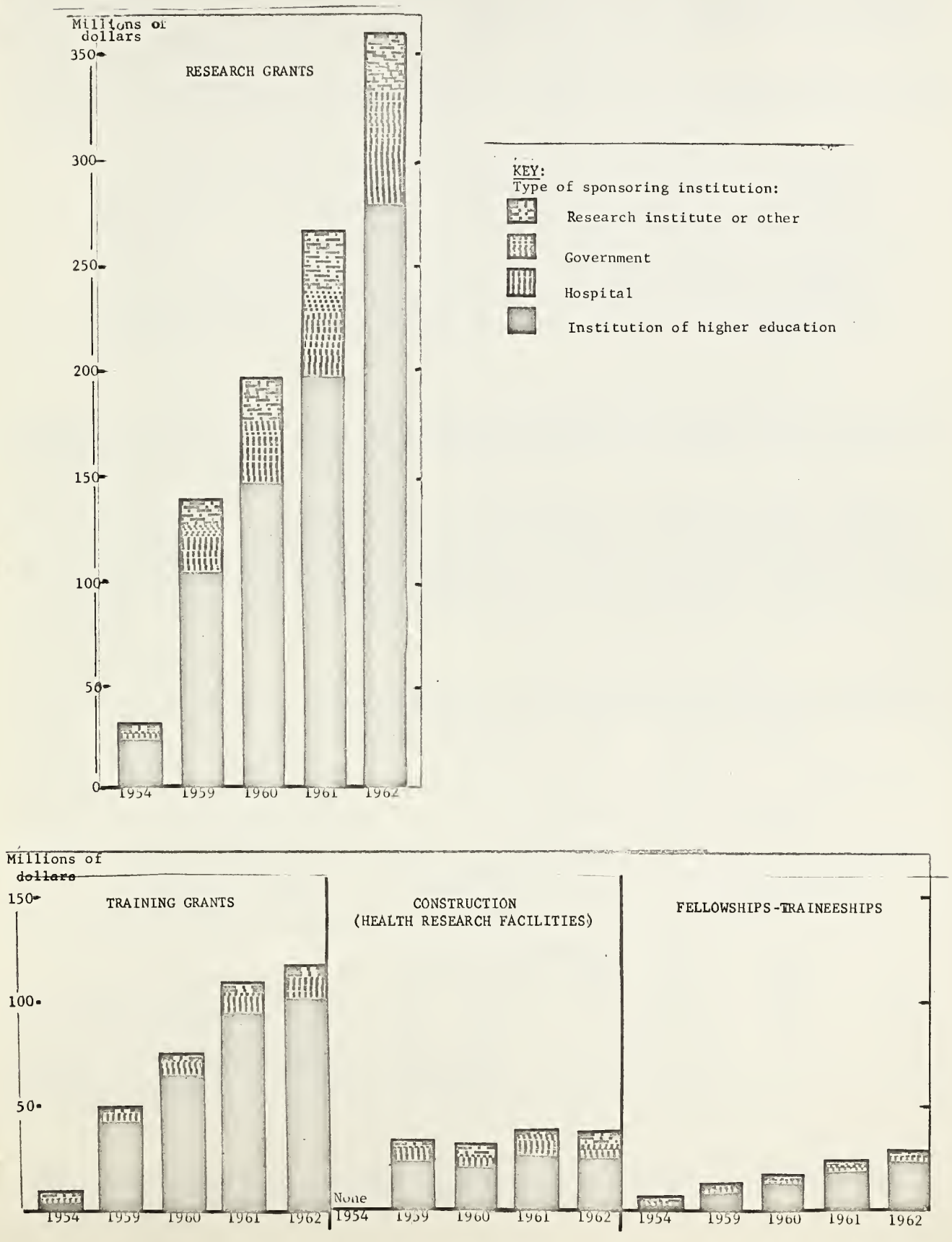
NIH Extramural Awards to U.S. Sponsoring Institutions
200 Leading Recipients and 972 Remaining Recipients, by Type.
United States. Fiscal Year 1962.

Type of sponsoring institution	Institutions		NIH extramural funds under four programs 1/	
	Number	Percent	Number	Percent
All types (U.S. only)	1,172	100.0	$539,356,815	100.0
Higher education	374	31.9	433,786,840	80.4
Hospital 2/	340	29.0	51,644,778	9.6
Research institute/other	353	30.1	40,731,441	2.4
Government	105	9.0	13,193,756	7.6
Leading institutions	200	17.1	$491,494,191	91.1
Higher education	116	9.9	420,263,160	77.9
Hospital 2/	45	3.8	36,720,112	6.8
Research institute/other	30	2.6	25,561,727	4.7
Government	9	.8	8,949,192	1.7
Remaining institutions	972	82.9	$47,862,624	8.9
Higher education	258	22.0	13,523,680	2.5
Hospital 2/	295	25.2	14,924,666	2.8
Research institute/other	323	27.5	15,169,714	2.8
Government	96	8.2	4,244,564	.8

1/ Excluding formula grants and contracts.
2/ Excludes hospitals owned by a university or research institute.

1 Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives. 89th cong., 1st sess. Department of Health, Education, and Welfare. op. cit., pp. 83-84, 107, 160.

Figure 16
FUNDS AWARDED UNDER EACH EXTRAMURAL PROGRAM, BY TYPE OF SPONSORING INSTITUTION
UNITED STATES AND POSSESSIONS. FISCAL YEARS 1954 - 1962



The inference may then be drawn that while numbers of sponsoring institutions of each type are increasing, most institutions which are new to NIH begin their projects on a fairly modest scale. That this scale need not be too modest is illustrated by experience of the small institution of higher education. Universities and colleges with 2,499 or fewer students were awarded total funds which came to an average of $52,514 in fiscal year 1954, $105,025 in 1959, and $165,427 in 1962. Aggregate funds to these academic centers rose from $2½ million in 1954 to almost $29 million in fiscal year 1962. Today at least $30 million are being disbursed to small universities and colleges for research and training under NIH auspices.

More specific illustration may be cited from the experience of NIMH. From more than 380 institutions receiving NIMH training grant support between 1948 and 1961, one-fifth of the institutions received three-fourths of all funds, while four-fifths of the institutions shared the remaining one-fourth of funds.[1]

> "The larger recipients tended to receive the larger amounts of support, both in funds and in numbers of projects. These larger recipients, in general, have received support over a longer period of time than have the smaller ones. Grantee institutions with total awards from fiscal year 1948 through 1961 of one-half million dollars or more had received grant support over periods ranging usually from 12 to 14 years; periods of support for institutions with total awards amounting to less than $100,000 were usually only one to six year.
>
> "Institutions in the upper range of total awards have been supported for an average of 12 to 18 different mental health training projects, with awards ranging from $130,000 to $160,000 per project for the entire period of support. Those in the lower range, usually the more recent recipients of grant awards, tend to have had less than two projects, at a total cost through 1961 of less than $50,000."

(g) Spreading the Impact of NIH Dollars Among Universities and Colleges

Public concern is often expressed lest NIH and other Federal granting agencies concentrate awards upon a few institutions of higher education rather than broaden the operating base. In keeping with this attitude, Committees exploring the Nation's research and development potential voice the need for more academic centers of true excellence in science and education.

NIH would be negligent were it to depart from its legislated mission of approving only the most exemplary applications under each of the extramural programs. In so maintaining its standards, however, it has stimulated a vast expansion in research base. This expansion has taken place through an ever-growing complex of satellite units which are attaching themselves to the hitherto simpler academic scene. Whether for idealistic purposes, intellectual aims, financial or management reasons--or because of the interrelationship which exists between the university and the federal government in its conduct of defense, health, and other research and development programs--the academic complex today resembles a large corporation with its many interlocking subsidiaries.

INCREASED CONCENTRATION?

The rather striking consistency in percent distribution of NIH extramural funds disbursed to U.S. institutions of higher education when placed in descending order of magnitude of NIH awards per institution during each of the fiscal years 1954, 1959, and 1962 is shown in table 18. It should not be inferred that the same universities or colleges occupied identical levels of rank from year to year. (appendix table 62) Were there a tendency to approve an increasing proportion of funds to a few select universities or colleges, the proportion of funds to the leading 25 would show an increase in 1962 as contrasted with 1954. If anything, there has been a tendency in the reverse direction, with lower proportions of funds to academic centers with best rank, and higher proportions to institutions occupying a position of lesser importance.

Not only have NIH funded dollars to institutions of higher education increased 12-fold over these years; the number of health-related legal components at each university has expanded markedly. This widening base, which is particularly research oriented, is also contributing to student education.

Table 18

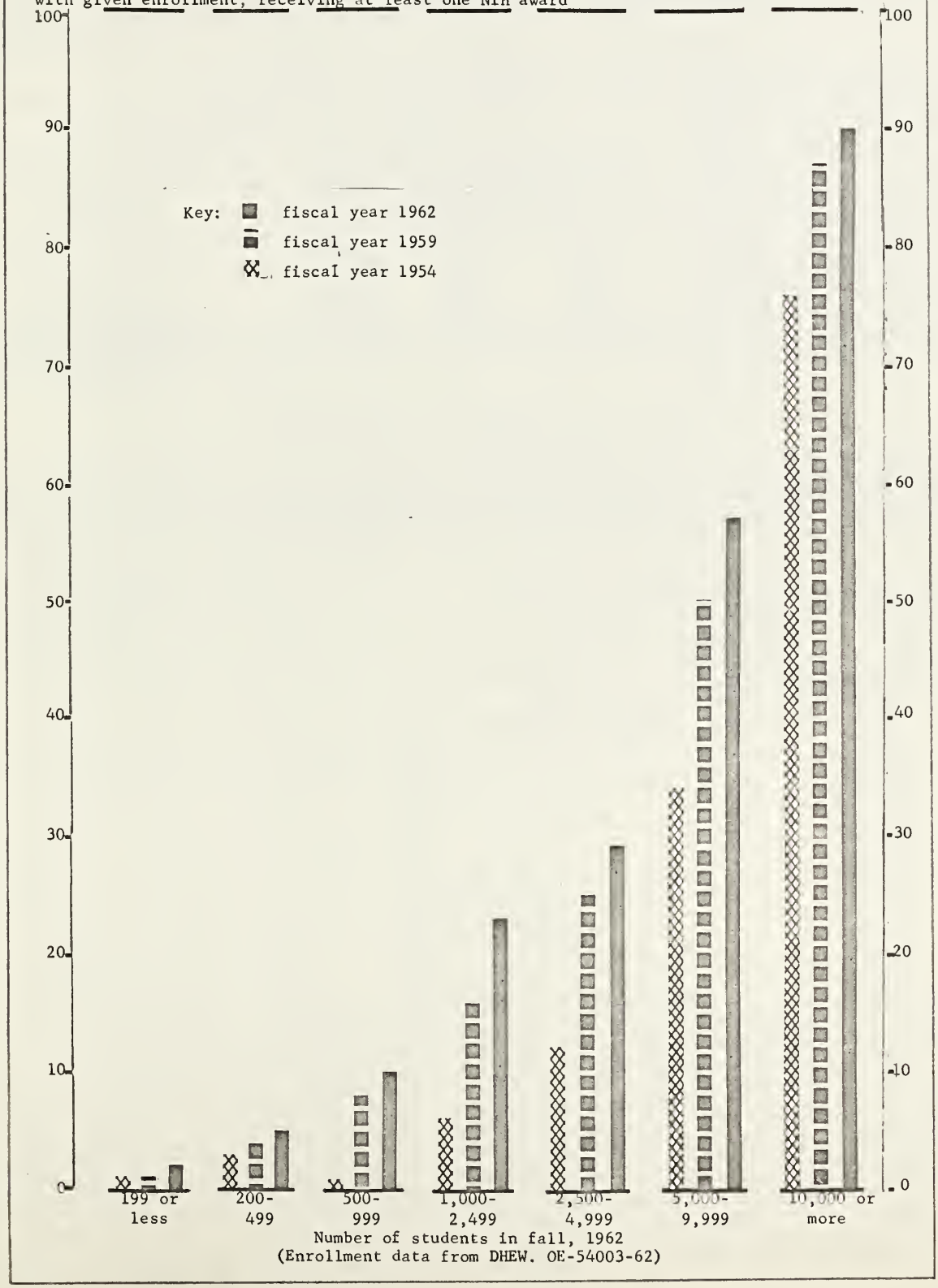
Distribution of NIH Funds to U.S. Institutions of Higher Education According to Rank of the Institution Each Fiscal Year. Fiscal Years 1954, 1959, and 1962

Rank of U.S. institution of higher education in NIH extramural funds (4 programs)	Funds under four NIH programs to U.S. institutions of higher education each fiscal year		
	1962	1959	1954
All funds (thousands) to U.S. higher education	$431,899.0	$183,414.6	$35,228.0
Percent	100.0	100.0	100.0
1 - 25 in rank	58.7	57.5	62.4
26 - 50	21.8	21.5	21.4
51 - 75	10.5	11.1	10.0
76 - 100	5.0	5.5	3.9
101 or above	4.0	4.4	2.3

1 NIH. NIMH. TB. National Institute of Mental Health Training Grant Program, Fiscal Year 1963. A Statistical Sourcebook. PHS Publication No. 1272, 1965, pp. 2, 14, 104.

Figure 17

PROPORTION OF TOTAL U.S. INSTITUTIONS OF HIGHER EDUCATION WITH GIVEN ENROLLMENT IN FALL 1962 WHICH RECEIVED AT LEAST ONE NIH AWARD UNDER ONE OR MORE OF FOUR NIH EXTRAMURAL PROGRAMS in FISCAL YEAR 1954, in FISCAL YEAR 1959, and in FISCAL YEAR 1962



THE ACADEMIC CENTER WITH LIMITED ENROLLMENT

A study of U.S. universities and colleges with small enrollment reveals that the number of such institutions in receipt of NIH awards increased measurably as the extramural budget expanded. For the sake of consistency, a small institution of higher education is here defined as one with a fall 1962 enrollment of 2,499 or fewer students. Sponsoring centers of learning were determined for three award periods: fiscal years 1954, 1959, and 1962. Regardless of enrollment in 1954 or 1959, institutions having 2,499 students in 1962 were placed in one group, while those having 2,500 or more students in 1962 were placed in another group. Table 19 shows the increasing proportion of smaller colleges among NIH grantees in 1959 and again in 1962 as contrasted with 1954; and, in reverse, it shows lower proportionate representation of large institutions among total schools. (appendix tables 63 , 64)

Table 19

Distribution of U.S. Institutions of Higher Education Receiving NIH Awards According to Enrollment at the Institution in 1962. Fiscal Years 1954, 1959, and 1962

Enrollment at U.S. institution of higher education in the fall of 1962	Institutions receiving an NIH award under at least 1 of 4 NIH programs each fiscal year		
	1962	1959	1954
Number of institutions	372 1/	302 1/	174 1/
Percent	100.0	100.0	100.0
2,499 or less students	46.8	40.4	26.4
2,500 or more students	53.2	59.6	73.6

1/ Count is exclusive of U.S. possessions, and differs in this respect from counts shown in appendix tables.

Figure 17 shows this material in more detail, indicating NIH representation among schools of different size. Again using 1962 enrollment as a base, percentage of colleges and universities of a given size receiving one or more NIH awards is plotted as a percentage of total U.S. institutions of higher education for three selected fiscal years. The heavily shaded bar denoting the most recent year extends farther than each of the other bars, particularly at the three sizes covering 1,000 to 9,999 students.

(h) Awards Through Contractual Arrangement, by Type of Institution

Contract funds disbursed under auspices of the NIH extramural program (as distinct from grants) have grown steadily until in fiscal year 1964 they amounted to more than $42½ million. Some $35 million, or more than 80 percent of such funds, were directed to research institute and other organizations including private enterprise, $5 3/4 million to institutions of higher education, and a little more than $1 million to hospitals and governmental authorities combined (with the larger share to hospitals). (appendix table 65)

CONTRACT FUNDS BY FUNDING INSTITUTE

In fiscal year 1964, NCI funded 70 percent of NIH research contract funds, as illustrated in table 20. Each of the Institutes has extensive plans for contract research programs in 1966, however.

Table 20

NIH Research Contracts by Institute or Division, (U.S. and Foreign), Fiscal Year 1964

Institute or Division	Number of contracts	Amount	Percent
Total	597	$42,677,165	100.0
Allergy and Infectious Diseases	43	4,245,730	10.0
Arthritis and Metabolic Diseases	6	297,662	.7
Cancer	316	30,278,675	70.9
Child Health and Human Development	6	138,299	.3
Dental	16	464,319	1.1
General Medical Sciences	16	1,524,108	3.6
Heart	20	819,897	1.9
Mental Health	109	2,393,768	5.6
Neurological Diseases and Blindness	31	1,022,608	2.4
Research Services	12	599,655	1.4
Biological Standards	11	363,177	.8
Office of the Director	5	197,043	.5
NINDB, NIAMD, NIMH combined	1	10,630	0.0
Research Grants	2	108,894	.3
Research Facilities and Resources	3	212,700	.5

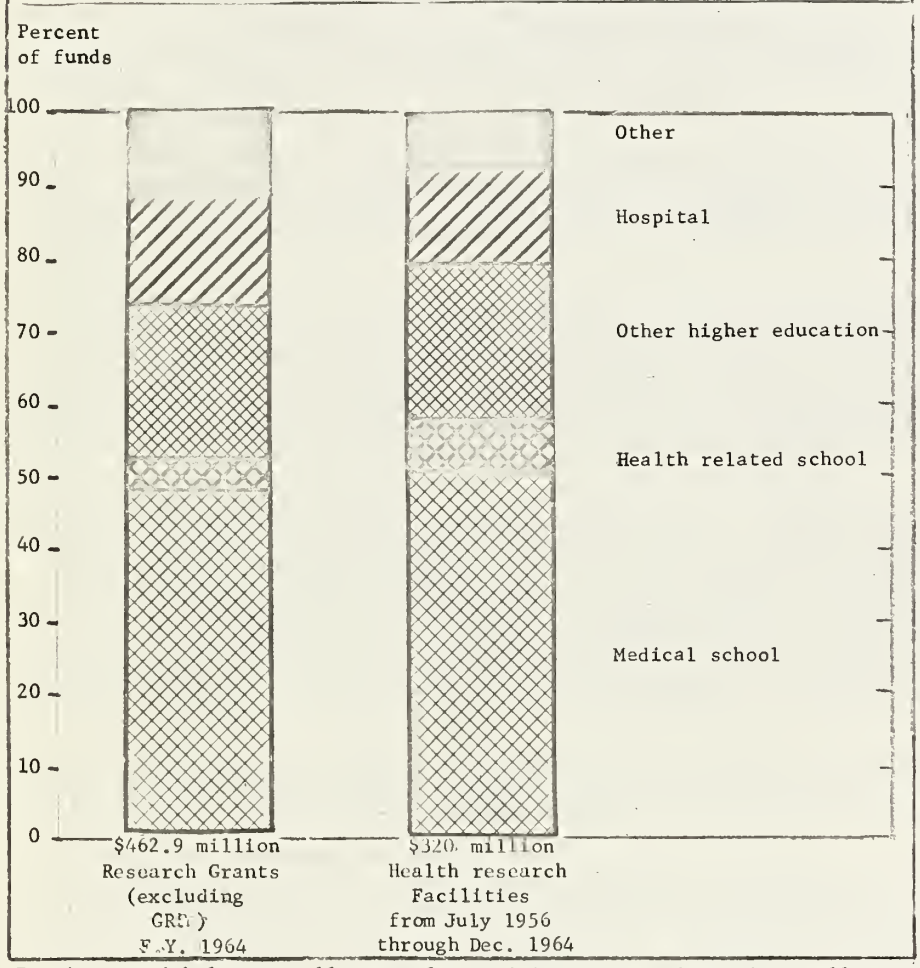
Some examples of research programs envisioned under the various Institutes may be cited. NICHD plans the establishment of two collaborative field research units through the use of contractual agreements with research foundations or universities, in a defined area such as reproductive biology or perinatal biology. NIDR would like to extend research contracts in collaborative studies in (1) the development of new dental restorative materials with special and particular bonding qualities; (2) epidemiological and biometric studies of periodontal disease in relation to protein deficiency; and (3) the evaluation of table salt as an effective and safe vehicle to provide fluoride as a dental decay preventive measure. NHI is formulating plans for a comprehensive research and development contract program to supplement biomedical research currently underway on artificial hearts. NIAID is establishing contract research programs with university, industrial and other laboratories for the development and/or production of (1) specific typing sera for human lymphocyte antigens essential for developing effective in vitro tests for histocompatibility of donors and recipients of tissue transplants; (2) uniform immunologic research reference reagents; (3) a comprehensive screening of various antigens of animal, bacterial, or viral origin as well as of synthetic antigens capable of regularly producing a permanent tolerance to homologous or heterologous tissues; (4) effective immunosuppressive drugs which would bridge the final gap between closely matched donor and recipient tissues. Again NIGMS presented a 1966 budget estimate of more than $1½ million (in contrast to $315 thousand for 1965) for contracts, primarily with the National Research Council and the National Academy of Science group.[1]

1 Hearings..... Department of Health, Education, and Welfare. Part 3. National Institutes of Health. 89th Cong., 1st Sess., 1965 op. cit., pp. 318, 110, 497, 116, 179.

(i) Awards by Professional Orientation of Grantee Unit

When NIH awards are analyzed according to the professional orientation of the particular section of an institution to which the award is directed, clearcut results are not readily available. This difficulty arises because of the divergence in interdepartmental structure of the many institutions of higher education as well as hospitals throughout the country, together with the fact that any individual in the conduct of his research or training program may himself be responsible to or deal with any number of different units within the sponsoring institution.

Figure 18
PROPORTION OF NIH RESEARCH GRANT FUNDS, FISCAL YEAR 1964
AND PROPORTION OF NIH HEALTH RESEARCH FACILITY FUNDS
JULY 1956 THROUGH DECEMBER 31, 1964
ACCORDING TO PROFESSIONAL ORIENTATION OF GRANTEE UNIT



PROFESSIONAL PATTERN
In broad terms, it may be said that about one-half of NIH awards are directed to schools of medicine (including schools of osteopathy); anywhere from 5 to 10 percent are directed towards health-related schools (depending upon the program and the definition of health-related); some 10 to 15 percent go to hospitals. Academic departments which are not mainly concerned with health matters conduct about 20 percent of awards. These may be departments of science, engineering, or psychology which have an overall relationship to NIH objectives; or they may be those whose subject matter pertains to the interests of a single Institute.

RESEARCH AND CONSTRUCTION
Over the seven and one-half years ending December 31, 1964, the Surgeon General approved grants to 990 health research facilities projects amounting to almost $320 million. As seen in figure 18, distribution of funds by professional orientation of grantee unit was similar to that of the $463 million awarded in NIH research grant funds (exclusive of GRS) in fiscal year 1964.[1,2] (appendix table 66)

TRAINING GRANTS
The pattern of training grant award distribution according to professional orientation of grantee unit does not vary appreciably from that above. (appendix table 67) NIMH and NIGMS, the two Institutes with largest allotment for training grants, devoted a smaller proportion of funds to medical schools than did other Institutes. Funds for mental health training were proportionately high in the health-related school category (which includes nursing), as were those for NIAID. A field of almost exclusive concern to mental health is that of social service and social welfare to which 14 percent of mental health training funds were devoted fiscal year 1962. That year the rather broad category "arts and sciences" claimed some 16½ percent of NIGMS funds. Training at psychiatric hospitals accounted for some 6 percent of NIMH funds, while hospitals specializing in cancer drew almost 7 percent of NCI funds. State and local outpatient facilities were utilized for 2½ percent of NCI training funds. The National Institute of Dental Research devoted 90 percent of training funds to schools of dentistry.

(j) Origins of Scientific Manpower

Scientific manpower needs today are such that it is valuable to explore the sources of NIH research scientists. In so doing, various studies may be cited. Among them are an analysis of institutions of higher education which conferred the B.A. degree or its equivalent upon a sample of NIH principal investigators; a survey of personnel on NIH research grants; and studies of present-day occupation of individuals who received training under NIH sponsored training grants.

1 Serving Health Research. PHS Publication No. 1047. op. cit., p. 3.
2 NIH. DRG. A Guide to Public Health Service Grants and Awards. op. cit., pp. 12-14.

ACADEMIC INSTITUTIONS GRANTING UNDERGRADUATE DEGREES TO FUTURE SCIENTISTS.
A study of 1,884 U.S. educated principal investigators awarded new research grants under recommendations of the June 1959 and November 1959 national advisory councils, sought to determine universities and colleges which conferred the B.A. or comparable first degree upon these scientists. It was suggested that the "study should be relevant to the perennial speculations and questions on the subject of origins of scientific manpower."[1]

The 1,884 principal investigators accorded approval for a new NIH research grant project at this time had graduated from 351 academic institutions. The 351 schools represented about one-fourth of all universities, liberal arts colleges and professional schools in the U.S. during the academic year 1958-1959. Their enrollment accounted for three-fifths of the national total including graduate students. The 351 institutions were also a good cross section of the 394 institutions of higher learning each of which received one or more NIH extramural awards over the period fiscal years 1959-1961.[2]

Range in number of "sample" scientists graduating from a single university or college was one (145 individuals, each graduating from a different institution) to 113 in the case of a large state university. The 20 centers of learning which were outstanding in number of "sample" scientists receiving an undergraduate degree under their auspices were identified, and the institutions were listed in order of number of graduates contributing to the study.

Range in ratio of "sample" scientists graduating from a single university or college to the enrollment at that institution during the academic year 1958-1959 was also determined, and the 20 centers of learning which were outstanding in ratio of future principal investigators to future size of student body was noted. The 20 centers of learning which were outstanding in this respect were also listed in order, this time with reference to ratio.

The outstanding finding of this study was that only 5 institutions of higher education appeared on each of the above lists. Whereas academic centers with large enrollment tended to contribute a larger number of future scientists, most universities and colleges which produced a high ratio of principal investigators to size of student body were, in effect, those with "small" enrollment. In fact, the 10 institutions with highest ratio accounted for slightly less than 1 percent of national enrollment yet contributed 10.7 percent of principal investigators among the 1,884; the next 10 also represented less than 1 percent of national enrollment and contributed 6.7 percent of the 1,884 "sample" scientists.

STUDENTS ON RESEARCH GRANT PROJECTS
Another source of future scientific research manpower lies in student professional personnel employed by institutions sponsoring NIH research grants. A recent survey of personnel working on 932 such projects (selected from approximately 13,000 projects active during fiscal year 1963) revealed that of 6,931 individuals shown to be employed under the 932 projects, 1,641 were students.[3] Moreover, 984 of the 1,641 were working in a professional capacity. Site of research employment for the 984 was divided proportionately as follows: 39 percent, university or college (general); 29 percent, school of medicine, with an additional 7 percent combining school of medicine and hospital; 12 percent at other professional schools (agricultural, dental, engineering, pharmacy, public health, or veterinary medicine); 7 percent at a hospital; 5 percent at a research organization.

Thus some 15 percent of all personnel employed under the NIH research projects included in the study were students working in a professional capacity. These individuals are to be distinguished from persons who receive training through NIH training grant projects.

PRESENT OCCUPATION OF FORMER TRAINEES
Two studies have been conducted recently in the effort to evaluate whether training grant program awards accomplish their objectives. Of paramount interest in each is the current professional status of individuals who had trained under the program in earlier years. One study is limited to NIMH trainees and concerns material collected February 1962 for a sample of persons who received NIMH stipends while in training from 1947 through the summer of 1960.[4] The other study relates to trainees under programs funded by the other NIH Institutes, having received their last support prior to June 30, 1960.[5]

The NIMH study represents a 25 percent sample: 2,023 respondents (88 percent of those queried) provided information on the questionnaire mailed to them. The Institute-wide study represents a 40 percent sample: 2,686 respondents (75 percent of those queried by mail).

Of persons responding to the NIMH study, a small percentage were still in training, some few were employed in a professional capacity other than a mental health specialty, and 88 percent (1,644 persons) were actively employed in a professional activity relevant to the area in which they received NIMH support. NIMH grouped

1 NIH. OD. OPP. DAS. Program Analysis Report No. 14. Academic Institutions Granting Undergraduate Degrees to Scientists Later Participating as Principal Investigators Under NIH Research Grants. March 1963.
2 NIH. OD. OPP. DAS. Program Analysis Report No. 10. A Summary of NIH Awards to Institutions of Higher Education of the United States and Its Possessions 1959-1961. January 1963.
3 NIH. DRG. SAB. SSS. Program Analysis Report No. 17. A Survey of Personnel Working on PHS Research Grant Projects Fiscal Year 1963. January 1965, p. 151.
4 Current Professional Status of Mental Health Personnel Supported Under National Institute of Mental Health Training Grants. PHS Publication No. 1088. U.S. Govt. Print. Off., September 1963, p. 10.
5 NIH. DRG. CDRB. NIH Indirect Trainees 1950-1960, Current Professional Status. Draft, June 1, 1964.

the latter according to the 10 most common combinations of professional activity of former trainees, as reproduced in table 21. "Among the top-ranking patterns, clinical practice is represented in 9, supervision and training in 6, teaching in 5, and consulting in 5. Only 1 percent of the trainees spend their time exclusively in private clinical practice." Percent of former trainees actively engaged by type of activity is:

- Research - 35%
- Teaching - 47%
- Clinical Practice - 74%
- Supervision and training - 50%
- Consulting - 46%
- Administration - 43%
- Other - 3%

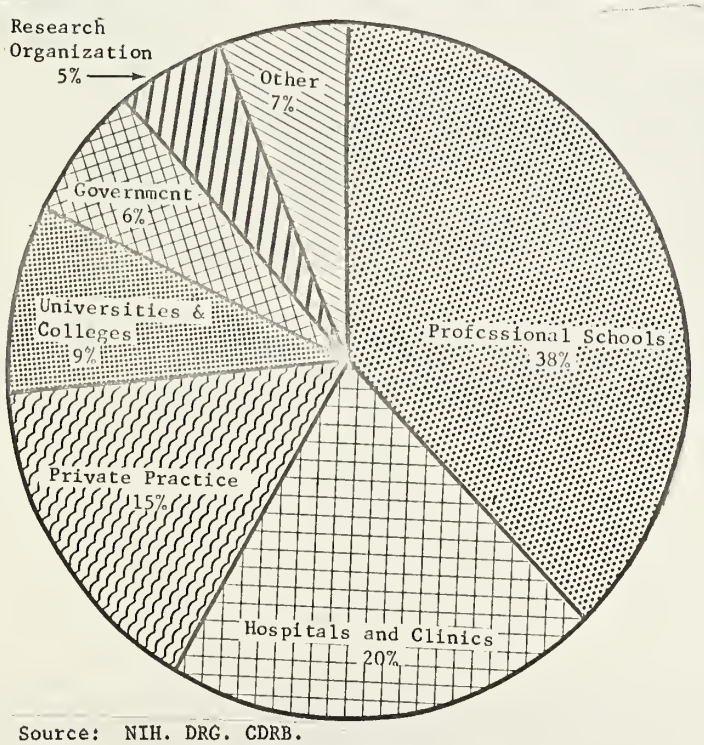
Proportion of time spent in each professional activity is more revealing: 48 percent of the respondents' time was spent in clinical practice; in no instance was more than 12 percent of their time spent in pursuit of any one of the other activities identified.

Table 21
Ten Most Common Combinations of Types of Professional Activity of Former Trainees 1/

Combination of activities	Number	Percent
Clinical practice	254	15
Research+teaching+clinical practice+supervision and training+consulting+administration	134	8
Clinical practice+consulting	70	4
Teaching+clinical practice+supervision and training+consulting+administration	57	3
Clinical practice+supervision and training+consulting+administration	52	3
Clinical practice+supervision and training	49	3
Clinical practice+supervision and training+consulting	45	3
Teaching+clinical practice	43	3
Teaching	42	3
Research+teaching+clinical practice+supervision and training+administration	41	2
Other combinations	857	52
Total	1,644	100

1/ Source: PHS. Publication No. 1088, p. 10

Figure 19
DISTRIBUTION OF RECENT TRAINEES, BY TYPE OF POST-TRAINING ORGANIZATION
(ALL TRAINEES UNDER TRAINING GRANTS FUNDED BY INSTITUTES OTHER THAN NIMH)



Source: NIH. DRG. CDRB.

Of the 2,686 Institute-wide former trainees, 89 percent reported post-training employment in a professional situation relevant to area of training. Almost one-half had located in an academic milieu, with the greater part attached to health-related schools, as seen in figure 19.

Distribution of respondents by the then-current activity is as follows: clinical practice, 38 percent; teaching, 28 percent; research, 25 percent; administration, 4 percent; and "other," 5 percent.

These data should be interpreted in light of the chronology of grantee respondents. Because of the pyramiding of grants in later years, and the fact that more recent trainees were more readily located, 91 percent of those who returned their questionnaires had completed training during the last three years of the study period, 1958-1960, with 9 percent having completed training over the years 1950 through 1957.

BROAD SCOPE OF NIAMD TRAINING GRANTS PROGRAM

Interests of NIAMD training programs center in departments of medicine at medical schools, usually representing one-half of the departments in a given school. Departments of dermatology, medicine, obstetrics and gynecology, orthopedics, pediatrics, surgery, and urology may cooperate in any one program. Such diversity renders programs of this Institute unique as one of the most broadly based NIH training grant programs.1

1 Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives. Department of Health, Education, and Welfare. Part 3. National Institutes of Health. 89th Cong., 1st sess., 1965, p.650

(k) Mobility of Scientific Manpower

The geographic site of institutions which offer educational, training, or employment opportunities in scientific fields determines in large part the location of individuals with scientific interests. It is not intended that scientific manpower per se be under discussion in this volume. The particular phenomenon of mobility may be touched upon, however.

Further analysis of the 1,884 principal investigators under new research grants approved upon recommendation of the June 1959 and November 1959 national advisory councils reveals that differential mobility as illustrated by the small sample of scientists under study followed "an entirely unique pattern" as contrasted with the "migratory experience of the total population of the United States by region and race for the past three decades."[1]

Of the 1,884 principal investigators, only 376 individuals (20 percent of the total) were residing in the same State in 1960 as that in which they were born; 35 percent were residing in the region of their birth. Most highly mobile were those who attended universities or colleges at the 4-year level located in a region other than region of birth. Hence, while such States as New York and California were most represented by numbers of scientists studied--whether considered in terms of numbers born in the State or residing there in 1960--a vast interchange of individuals had taken place.

Other studies illustrate the fact that location of place of employment of health-related personnel is heavily influenced by site of education and training. NIMH, in its study of persons who received stipends under NIMH training grants from 1947 through summer 1960, found that the ratio of persons (then) currently employed in a geographic region of the U.S. corresponding to region of training was higher than the ratio of persons (then) currently employed in a geographic region corresponding to region of birth.[2]

Geographic mobility is an outgrowth of a multitude of ecological relationships involving such variables as climate, economic benefits, family prestige, intellectual atmosphere, and leaning towards selected careers or career opportunities. Another type of mobility concerns that from one position to another within the same locale. Subtle factors involving personal preference and interpersonal relationships with other staff workers as well as possibility of vertical advancement enter into the decision making process here. An understanding of attrition and turnover among subprofessional employees in science-related fields becomes increasingly important as working time of professional staff is devoted to the most highly refined duties, while supportive tasks are deskilled for less accomplished co-workers.[3]

The recent report of the Committee on Utilization of Scientific and Engineering Manpower highlights the problem of mobility:[4]

> "American universities will be weakened if faculty members come increasingly to feel that their primary loyalty belongs not to the university but to some outside entity that represents their field of scholarship and provides it large support. Migratory research workers following available funds and having deep roots in no institution can hardly contribute to the coherence, unity, and spirit of commitment so essential to great educational institutions. They also miss the benefits that full devotion to the company of scholars in residence can provide. Devotion to a program or to a field of scholarship--which is admirable, of course--need not conflict with commitment to a university."

New concepts are taking their places in the American scene: the medical complex, the multiuniversity, the regional research center. Issuance of the report of the President's Commission on Heart Disease, Cancer and Stroke, in December 1964, gives further indications of broadening horizons.[5] Whether these will lead to a building up of local resources and of local pride which encourage individuals toward experience in depth, or whether they will stimulate further mobility, is a matter for future study.

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1 NIH. DRG. SAB. Geographic Origins and Mobility of Scientists Participating as Principal Investigators Under NIH Research Grants Originating in 1960. Draft for preliminary review.

2 PHS Publication No. 1088. op. cit., pp. 27, 44, 52, 71, 72, 73.

3 NIH. NIMH. TB. A Mental Health Manpower Studies Program. PHS Publication No. 1027. U.S. Govt. Print. Off. Washington, D.C., March 1963, p. 24.

4 Report of the Committee on Utilization of Scientific and Engineering Manpower. Toward Better UTILIZATION of Scientific and Engineering Talent, A Program for Action. National Academy of Sciences. Washington, D.C., 1964, p.34.

5 The President's Commission on Heart Disease, Cancer and Stroke. A National Program to Conquer Heart Disease, Cancer and Stroke. U.S. Govt. Print. Off., 1964.

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IV GROWTH PATTERNS IN PERSPECTIVE

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IV Growth Patterns in Perspective

A Federal Agency as large as the National Institutes of Health, one of three Bureaus of the Public Health Service, U.S. Department of Health, Education and Welfare, bears a heavy mandate from the citizens of the United States. Once housed in a close-knit unit of buildings within easy proximity to one another on the NIH "reservation," its facilities and laboratories now extend into the heart of the nearby business community.

In the process of growth, the various Institutes and Divisions of NIH have matured differently, each conducting its own affairs, whether intramural or extramural. But each, through its extramural interests, has developed close relationships with organizations who act as grantee institutions under the various programs.

This publication attempts an overall presentation of the extramural programs of NIH as they have evolved. In so doing it brings the interested reader brief analytical insight into their patterns of growth.

During the period under review numerous distinguished officials of NIH, Committees and Commissions have devoted their efforts to study of various aspects of these programs. Data presented here draw heavily upon their findings, many of which are now available in Government Printing Office publications. Other observations are based on hitherto unpublished materials. Full tables containing these data appear in the appendix to this report. They have originated largely from the statistical and analytical staff of the Division of Research Grants, NIH, during the past five years.

Today, as fiscal year 1965 comes to a conclusion, Dr. James A. Shannon, Director, National Institutes of Health, sees NIH Research efforts as a part of a continuum in program evolution:[1]

> "In looking back over the past 20 years and in reviewing the various programs the Public Health Service has evolved to support health and health-related research and training, I do not want to give the impression that there was an inevitability that these programs would develop as they did. What may appear obvious and even inevitable in 1965 was not necessarily obvious and inevitable in 1945--and in connection with some of our programs, is still not so, today.
>
> "These programs must be conceived and launched and then proved and improved. To those of us intimately concerned with this experimental process, the various stages of it are very clear: the 'preparation,' often protracted and at times frustrating; 'incubation,' or the gestation of ideas; 'illumination,' when the results begin to take shape--sometimes as we expected, sometimes not.
>
> "Enough time has now elapsed to permit us to trace this creative process in some of our programs through succeeding stages to the final one of 'verification.'.....
>
> "Within the last half-dozen years we have learned to think in terms of regional support in a number of our programs at NIH. The technological developments which brought large, expensive equipment such as computers into the biomedical research effort has led us to support these, too, on a regional basis, because only maximum use can justify such costs. These computers will be used not only by scientists within the institutions housing the equipment but by those working in private hospitals, public health departments, voluntary health agencies, medical schools, or Veterans Administration hospitals.
>
> "Clearly, what is happening is that the NIH has evolved new and supplemental mechanisms. While not abandoning its grants-in-aid to individuals, it has gone on to offer institutions themselves grant support for projects greater than any one person's--or even one institution's--capabilities.
>
> "It is too early to speak of the 'verification' of these programs in practice. Sometimes they include variables that are not expected, and sometimes they are capable of cancelling out other programs of NIH. The successful monitoring and modification of all of these varied programs is essential to good administration--and a constant challenge to creative administration....."

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1 Shannon, James A., M.D. "'Creative Administrator' in the Evolution of NIH," U.S. Medicine, April 1, 1965, pp. 21-23.

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APPENDIX TABLE 5

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Appendix Table 1

Distribution of NIH Extramural Grants and Funds Awarded for Five Programs,[1] and for Research Contracts, by Location

Fiscal Years 1954 and 1964

Program and location	Fiscal year 1964		Fiscal year 1954	
	Number of awards	Funds (in thousands)	Number of awards	Funds (in thousands)
Five extramural programs	26,018	$815,829	4,699	$46,065
Percent	100.0	100.0	100.0	100.0
U.S. and possessions	95.2	98.0	97.5	99.1
Foreign	4.8	2.0	2.5	.9
Research grants	16,020	$497,924	2,923	$30,827
Percent	100.0	100.0	100.0	100.0
U.S. and possessions	94.2	97.4	99.4	99.4
Foreign	5.8	2.6	.6	.6
Training grants	4,346	$165,908	565	$ 9,813
Percent	100.0	100.0	100.0	100.0
U.S. and possessions	99.7	99.8	100.0	100.0
Foreign	.3	.2	0	0
Health research facilities grants	129	$53,900	0	0
Percent	100.0	100.0	0	0
U.S. and possessions	100.0	100.0	0	0
Foreign	0	0	0	0
Fellowships/Traineeships	4,872	$44,469	1,163	$3,100
Percent	100.0	100.0	100.0	100.0
U.S. and possessions	94.0		91.4	92.3
Foreign	6.0		8.6	7.7
Health services formula grants	54	$10,950	48	$2,325
Percent	100.0	100.0	100.0	100.0
U.S. and possessions	100.0	100.0	100.0	100.0
Foreign	0	0	0	0
Research Contracts	597	$42,677	0	0
Percent	100.0	100.0	0	0
U. S. and possessions	98.0	99.1		
Foreign	2.0	.9		

1/ Supplemental grants included in count of grants.

Source: Public Health Service Grants and Awards publications, and DRG. SAB. DP. computer printouts for each fiscal year.

Appendix Table 2

Distribution of NIH Extramural Funds Awarded for Five Programs[1/] by Control of Sponsoring Institution
United States and Possessions, Fiscal Years 1954 and 1962

Program and control of sponsoring institution	Fiscal year 1962		Fiscal year 1954	
	Funds (in thousands)	Percent	Funds (in thousands)	Percent
Five extramural programs	$550,230	100.0	$45,647	100.0
Public	231,470	42.1	18,493	40.5
Private	318,760	57.9	27,154	59.5
Research grants	$359,702	100.0	$30,649	100.0
Public	143,082	39.8	10,850	35.4
Private	216,620	60.2	19,799	64.6
Training grants	$115,477	100.0	$ 9,813	100.0
Public	49,540	42.9	4,337	44.2
Private	65,937	57.1	5,476	55.8
Health research facilities grants	$ 36,760	100.0	0	0
Public	17,071	46.4	0	0
Private	19,689	53.6	0	0
Fellowships/Traineeships	$ 27,342	100.0	$ 2,860	100.0
Public	10,827	39.6	981	34.3
Private	16,515	60.4	1,879	65.7
Health services formula grants	$ 10,950	100.0	$ 2,325*	100.0*
Public	10,950	100.0	2,325	100.0
Private	0	0	0	0

1/ Supplemental grants included in count of grants.
* Estimated

Sources: Public Health Service Grants and Awards publications, and DRG. SAB. DP. computer printouts for each fiscal year. Determination of control made by reference to Office of Education publication OE-50000-62, American Hospital Association, Hospitals, Guide Issue, 1962, and various foundation or organization or society directories.

Appendix Table 3

Distribution of NIH Extramural Grants and Funds Awarded for Five Programs,[1] by Type of Sponsoring Institution United States and Possessions, Fiscal Years 1954 and 1962

Program and type of sponsoring institution	Fiscal year 1962		Fiscal year 1954	
	Number of awards	Funds (in thousands)	Number of awards	Funds (in thousands)
Five extramural programs	21,777	$546,030	4,581	$45,647
Percent	100.0	100.0	100.0	100.0
Higher education[2]	82.8	79.4	81.4	77.1
Hospital	9.3	10.0	9.7	8.1
Government[3]	2.5	3.6	2.3	6.5
Research institute or other	5.4	7.0	6.6	8.3
Research grants	14,192	$359,701	2,905	$30,649
Percent	100.0	100.0	100.0	100.0
Higher education[2]	80.2	77.7	81.7	77.8
Hospital	10.3	10.5	9.9	10.0
Government[3]	2.6	2.8	.7	1.7
Research institute or other	6.9	9.0	7.7	10.5
Training grants	3,684	$115,477	565	$ 9,813
Percent	100.0	100.0	100.0	100.0
Higher education[2]	85.3	88.4	82.1	92.8
Hospital	10.2	8.2	3.7	2.3
Government[3]	.5	.5	5.9	.3
Research institute or other	4.0	2.9	8.3	4.6
Health research facilities grants	112	$ 36,760	0	0
Percent	100.0	100.0	0	0
Higher education[2]	74.1	74.5	0	0
Hospital	17.8	16.3	0	0
Government[3]	3.6	4.6	0	0
Research institute or other	4.5	4.6	0	0
Fellowships/Traineeships	3,735	$ 27,342	1,063	$ 2,860
Percent	100.0	100.0	100.0	100.0
Higher education[2]	91.8	90.7	82.7	76.7
Hospital	4.1	5.1	12.0	15.9
Government[3]	2.9	2.8	1.8	2.8
Research institute or other	1.2	1.4	3.5	4.6
Health services formula grants	54	$ 6,750	48*	$ 2,325*
Percent	100.0	100.0	100.0	100.0
Higher education[2]	0	0	0	0
Hospital	0	0	0	0
Government[3]	100.0	100.0	100.0	100.0
Research institute or other	0	0	0	0

1/ Supplemental grants included in count of grants.

2/ Including any hospital, research institute, or other health related facility owned by a parent institution in this group.

3/ Excluding any institution of higher education or hospital under public control.

* Estimated

Appendix Table 4 1/

Average Size of Award, by NIH Extramural Program

United States and Possessions and Foreign Locations. Fiscal Years 1954 - 1964

NIH extramural program	Average size of award for each fiscal year 1/						
	1964	1963	1962	1961	1960	1959	1954
Research grants							
U.S. and possessions	$ 32,146	$ 27,828	$ 25,345	$ 20,375	$ 17,189	$ 15,586	$ 10,550
Foreign	13,851	14,099	15,833	15,190	16,737	17,251	9,888
Health research facilities							
U.S and possessions	$417,833	$288,253	$328,213	$254,964	$180,036	$154,009	0
Foreign	0	0	0	0	0	0	0
Training grants							
U S. and possessions	$ 38,199	$ 34,194	$ 31,346	$ 30,217	$ 28,091	$ 25,302	$ 17,368
Foreign	30,026	31,992	29,254	32,512	22,148	15,147	0
Traineeships/fellowships							
U.S. and possessions	$ 9,189	$ 8,360	$ 7,326	$ 5,286	$ 4,027	$ 3,712	$ 2,691
Foreign	8,171	7,799	8,118	7,469	6,762	6,368	2,391
Health service formula grants							
U.S. and possessions	$202,778	$202,778	$125,000	$111,111	$ 92,593	$ 80,000 *	$ 48,438 *
Foreign	0	0	0	0	0	0	0
Contracts							
U S. and possessions	$ 72,323	$ 77,933	$ 68,081	$ 73,879	$ 80,785 *	$ 53,620 *	0
Foreign	30,668	26,620	23,619	45,890	**	**	0

1/ Supplemental grants included in count of grants when calculating averages.

* Estimated.

**Not known.

Appendix Table 5

Number of NIH Research Grants Awarded for Each Institute/Division, by Size of Grant [1/]
United States and Foreign. Fiscal Years 1954 and 1962-1964.

Size of research grants	All Institutes	Number of research grants										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
						Fiscal Year 1964						
Total	16,020	1,525	2,950	855	1,725	402	2,030	2,479	1,849	1,726	400	79
Under $20,000	8,932	914	1,731	504	911	263	1,239	1,342	965	967	17	79
20,000 - 49,000	5,350	514	1,030	291	605	123	651	874	548	630	84	0
50,000 - 99,999	1,088	73	139	40	146	8	95	169	262	81	75	0
100,000 or more	650	24	50	20	63	8	45	94	74	48	224	0
						Fiscal Year 1963						
Total	15,973	1,784	2,978	0	1,869	474	2,306	2,579	1,940	1,691	352	0
Under $20,000	9,849	1,171	1,915	0	1,069	348	1,530	1,561	1,172	1,051	32	0
20,000 - 49,000	4,731	313	921	0	605	105	613	806	531	546	92	0
50,000 - 99,999	913	282	110	0	143	12	115	131	190	54	75	0
100,000 or more	480	18	32	0	52	9	48	81	47	40	153	0
						Fiscal Year 1962						
Total	14,975	1,803	2,754	0	1,914	411	2,127	2,603	1,712	1,498	153	0
Under $20,000	10,052	1,308	1,939	0	1,202	332	1,479	1,741	1,066	985	0	0
20,000 - 49,999	3,831	425	698	0	563	71	446	679	470	426	53	0
50,000 - 99,999	696	49	94	0	106	4	100	123	142	53	25	0
100,000 or more	396	21	23	0	43	4	102	60	34	34	75	0
						Fiscal Year 1954						
Total	2,923	303	395	0	745	35	342	611	180	312	0	0
Under $20,000	2,658	279	377	0	669	35	325	546	140	287	0	0
20,000 - 49,000	234	21	17	0	63	0	15	56	37	25	0	0
50,000 - 99,999	22	3	1	0	10	0	1	4	3	0	0	0
100,000 or more	9	0	0	0	3	0	1	5	0	0	0	0

1/ Supplemental grants included in count of grants. Includes field investigation awards.
Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 6

Distribution of Funds, by Size of NIH Research Grant Award for Each Institution/Division 1/
United States and Foreign. Fiscal Years 1954 and 1962-1964.

Size of research grant	All Institutes	Funds (in thousands of dollars) by Institute										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
Fiscal Year 1964												
Dollars	$497,924	$35,120	$68,590	$21,647	$55,735	$8,114	$50,820	$76,654	$58,882	$48,512	$73,652	$198
Percent	100	100	100	100	100	100	100	100	100	100	100	100
Under $20,000	20	30	30	28	19	35	29	21	15	23	0	100
20,000 - 49,999	32	44	44	40	33	44	37	33	30	39	4	0
50,000 - 99,999	15	14	13	12	17	7	12	15	31	11	7	0
100,000 or more	33	12	13	20	31	14	22	31	24	27	89	0
Fiscal Year 1963												
Dollars	$420,908	$36,225	$62,021	$ 0	$54,530	$8,831	$52,119	$70,961	$49,688	$43,143	$53,391	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	100	0
Under $20,000	25	36	36	0	22	41	32	25	21	28	1	0
20,000 - 49,999	33	42	43	0	34	34	34	33	33	38	6	0
50,000 - 99,999	15	14	12	0	17	9	15	13	29	8	15	0
100,000 or more	27	8	9	0	27	16	19	29	17	26	78	0
Fiscal Year 1962												
Dollars	$372,099	$33,965	$53,075	$ 0	$47,501	$6,580	$64,905	$69,398	$40,320	$36,354	$20,000	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	100	0
Under $20,000	29	41	42	0	27	53	23	28	23	31	0	0
20,000 - 49,999	30	36	37	0	35	31	20	29	36	34	10	0
50,000 - 99,999	13	9	11	0	15	4	11	12	24	10	9	0
100,000 or more	28	14	10	0	23	12	46	31	17	25	81	0
Fiscal Year 1954												
Dollars	$ 30,827	$ 2,814	$ 3,507	$ 0	$ 8,522	$ 296	$ 2,971	$ 7,169	$ 2,612	$ 2,936	$ 0	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	0	0
Under $20,000	70	73	86	0	65	100	79	67	50	77	0	0
20,000 - 49,999	21	21	12	0	20	0	14	21	42	23	0	0
50,000 - 99,999	5	6	2	0	9	0	2	3	8	0	0	0
100,000 or more	4	0	0	0	6	0	5	9	0	0	0	0

1/ Supplemental grants included in count of grants. Includes field investigation awards.

Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 7 1/

Funds, by Size of NIH Research Grant Award for Each Institute/Division
United States and Foreign. Fiscal Years 1954 and 1962-1964.

Size of research grant	All Institutes	Funds (in thousands of dollars)										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
Fiscal Year 1964												
Total	$497,924	$35,120	$68,590	$21,647	$55,735	$8,114	$50,820	$76,654	$58,882	$48,512	$73,652	$198
Under $20,000	101,588	10,560	20,848	5,979	10,265	2,893	14,740	16,196	8,581	11,129	199	198
20,000 - 49,999	160,234	15,450	30,002	8,754	18,456	3,545	19,022	25,547	17,734	18,664	3,060	0
50,000 - 99,999	73,405	4,889	8,971	2,594	9,637	547	6,158	11,487	18,427	5,452	5,243	0
100,000 or more	162,697	4,221	8,769	4,320	17,377	1,129	10,900	23,424	14,140	13,267	65,150	0
Fiscal Year 1963												
Total	$430,908	$36,225	$62,021	$ 0	$54,530	$8,831	$52,119	$70,961	$49,688	$43,143	$53,391	$ 0
Under $20,000	108,821	13,193	22,523	0	12,035	3,592	16,459	17,877	10,541	12,244	355	0
20,000 - 49,999	140,454	15,015	26,534	0	18,366	3,036	17,858	23,497	16,612	16,264	3,272	0
50,000 - 99,999	64,958	5,170	7,272	0	9,504	781	7,640	8,769	14,277	3,574	7,972	0
100,000 or more	116,676	2,848	5,692	0	14,625	1,422	10,162	20,817	8,258	11,061	41,791	0
Fiscal Year 1962												
Total	$372,099	$33,965	$53,075	$ 0	$47,501	$6,580	$64,905	$69,398	$40,320	$36,354	$20,000	$ 0
Under $20,000	107,633	14,026	22,246	0	12,978	3,522	14,953	19,529	9,261	11,117	0	0
20,000 - 49,999	112,760	12,292	19,802	0	16,703	2,023	13,204	19,799	14,627	12,403	1,907	0
50,000 - 99,999	46,179	3,066	5,996	0	7,011	243	6,719	8,256	9,486	3,599	1,803	0
100,000 or more	105,527	4,581	5,030	0	10,810	791	30,030	21,814	6,946	9,236	16,290	0
Fiscal Year 1954												
Total	$ 30,827	$ 2,814	$ 3,507	$ 0	$ 8,522	$ 296	$ 2,971	$ 7,169	$ 2,612	$ 2,936	$ 0	$ 0
Under $20,000	21,609	2,052	3,006	0	5,554	296	2,348	4,776	1,319	2,258	0	0
20,000 - 49,999	6,397	584	411	0	1,721	0	405	1,510	1,088	678	0	0
50,000 - 99,999	1,507	178	90	0	723	0	60	251	205	0	0	0
100,000 or more	1,314	0	0	0	524	0	158	632	0	0	0	0

1/ Supplemental grants included in count of grants. Includes field investigation awards.

Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 8

Cost Category of Expenditures by Funding Institute from a Sample of 1,000 NIH Research Grant Projects, Percentage Distribution: Fiscal Year 1969

Category of expenditure	All research grant projects	Institute (or Division) 1/							
		NIAMD	NIDR	NCI	NHLI	NINDB	NIGMS	NAI	NIMH
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personnel	54.1	49.4	53.1	54.1	56.9	55.1	56.4	48.9	67.2
Principal investigator	5.5	4.5	4.6	4.1	11.0	4.5	10.8	4.0	8.8
Other professional	24.8	21.3	24.6	23.6	18.7	26.3	26.5	19.5	37.6
Nonprofessional	23.8	23.6	23.9	26.4	27.2	24.3	17.1	25.4	20.8
Permanent equipment	14.0	14.9	17.2	11.0	14.1	12.4	14.9	18.6	7.1
Items costing $2,499 and under	9.3	10.3	10.2	7.8	10.8	9.4	9.0	10.8	6.4
Items costing $2,500 and over	4.7	4.6	7.0	3.2	3.3	3.0	5.9	7.8	.7
Consumable supplies	13.7	17.0	10.7	15.1	11.4	16.2	10.9	15.2	8.0
Indirect costs	12.2	12.5	12.2	12.1	12.1	12.5	12.3	11.8	12.0
Travel	2.5	2.8	2.4	2.3	3.4	2.3	2.8	2.6	2.6
Domestic	2.1	2.1	2.0	2.0	3.3	2.0	2.5	2.2	2.4
Foreign	.4	.7	.4	.3	.1	.3	.3	.4	.2
Alteration and renovation	.3	.2	.6	.3	.3	.1	.1	.5	.1
All other	3.2	3.2	3.8	5.1	1.8	1.4	2.6	2.4	3.0
Total dollars expended by all research grant projects for given Institute	$17,209,700	$2,595,500	$2,362,300	$3,537,000	$314,900	$2,040,900	$1,665,200	$2,982,900	$1,711,000

1/ The Division of General Medical Sciences is referred to as an Institute in the discussion of this study.

Source: NIH. OD. OPP. DAS. Report no. 16.

Appendix Table 9
Cost Category of Expenditures by Size of Total Expenditures of Project
from a Sample of 1,000 NIH Research Grant Projects,
Percentage Distribution: Fiscal Year 1969

Category of expenditure	All research grant projects	Size of total expenditures of projects									
		$2,999 and under	$3,000 to 4,999	$5,000 to 9,999	$10,000 to 14,999	$15,000 to 19,999	$20,000 to 29,999	$30,000 to 39,999	$40,000 to 49,999	$50,000 to 99,999	$100,000 and over
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personnel	54.1	44.9	52.4	54.5	55.0	54.5	52.5	52.5	55.0	53.1	56.1
Principal investigator	5.5	17.0	11.8	7.2	6.6	7.1	6.0	4.1	3.8	3.2	1.6
Other professional	24.8	13.1	27.6	23.9	23.2	22.0	25.7	26.4	26.8	23.6	29.3
Nonprofessional	23.8	14.8	13.0	23.4	25.2	25.4	20.8	22.0	24.4	26.3	25.2
Permanent equipment	14.0	11.2	12.0	12.1	13.2	13.6	15.7	14.5	12.7	16.4	14.1
Items costing $2,499 and under	9.3	11.2	12.0	10.1	10.1	10.2	10.1	8.5	8.4	7.1	6.8
Items costing $2,500 and over	4.7	0	0	2.0	3.1	3.4	5.6	6.0	4.3	9.3	7.3
Consumable supplies	13.7	19.0	15.7	13.5	14.7	14.4	12.5	16.3	13.7	12.3	11.6
Indirect costs	12.2	11.6	12.1	12.5	12.4	12.4	12.7	12.0	12.4	9.9	11.9
Travel	2.5	7.4	4.6	3.3	2.6	2.7	2.7	2.2	2.4	2.3	1.2
Domestic	2.1	5.2	4.3	3.0	2.3	2.4	2.2	1.8	1.6	2.1	1.1
Foreign	.4	2.2	.3	.3	.3	.3	.5	.4	.8	.2	.1
Alteration and renovation	.3	0	0	.1	.1	.1	.3	.3	.2	1.2	.6
All other	3.2	5.9	3.2	4.0	2.0	2.3	3.6	2.2	3.6	4.8	4.5
Total dollars expended by all research grant projects of given dollar size	$17,209,700	$124,600	$197,100	$2,036,700	$2,924,500	$2,713,400	$2,904,000	$1,846,500	$1,161,500	$1,262,200	$1,939,200

Source: NIH. OD. OPP. DAS. Report No. 16

Appendix Table 10

Cost Category of Expenditures by Fiscal Age of Grant from a Sample of 1,008 NIH Research Grant Projects, Percentage Distribution: Fiscal Year 1960

Category of expenditure	All research grant projects	Fiscal age of research grant project									
		First year	Second year	Third year	Fourth year	Fifth year	Sixth year	Seventh year	Eighth year	Ninth year	Ten or more years
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personnel	54.1	42.5	57.6	63.6	56.8	57.6	56.6	63.9	54.3	55.4	65.7
Principal investigator	5.5	5.9	6.3	4.6	4.9	3.7	6.2	6.7	6.5	4.5	4.4
Other professional	24.8	19.2	24.5	30.6	26.1	29.3	26.3	32.3	18.0	29.2	32.6
Non-professional	23.8	17.4	26.8	28.4	25.8	24.6	24.1	24.9	29.8	21.7	28.7
Permanent equipment	14.0	24.8	9.0	6.8	10.9	10.6	11.7	5.7	10.0	9.8	8.9
Items costing $2,499 and under	9.3	16.1	7.5	4.7	5.1	7.3	7.9	5.1	8.8	5.5	6.9
Items costing $2,500 and over	4.7	8.7	1.5	2.1	5.8	3.3	3.8	.6	1.2	4.3	2.0
Consumable supplies	13.7	13.5	14.0	11.4	15.9	13.3	14.4	13.6	16.5	19.5	13.1
Indirect costs	12.2	11.9	12.4	12.4	12.0	12.8	12.5	12.7	13.0	12.6	10.2
Travel	2.5	2.5	3.4	2.2	2.5	1.9	2.3	1.8	2.8	2.0	1.7
Domestic	2.1	2.1	3.1	1.9	1.9	1.8	1.8	1.4	2.3	1.7	1.4
Foreign	.4	.4	.3	.3	.6	.1	.5	.4	.5	.3	.3
Alteration and renovation	.3	.5	.3	1/	.3	1.0	0	0	.3	0	.1
All other	3.2	4.3	3.3	3.6	1.6	2.8	2.5	2.3	3.1	.7	.3
Total dollars expended by all research grant projects for given fiscal age	$17,209,700	$5,448,800	$3,325,900	$3,071,000	$2,701,400	$662,200	$456,700	$561,100	$344,500	$229,700	$407,800

1/ Less than .1 percent.

Source: NIH. OD. OPP. DAS. Report No. 16.

Appendix Table 11

Cost Category of Expenditures by Institutional Unit for a Sample of 1,000 NIH Research Grant Projects, Percentage Distribution: Fiscal Year 1969

Category of expenditure	All research grant projects	Institutional unit						
		School of medicine	University or college (general)	Other professional school 1/	Hospital, clinic, treatment center	Research institute, laboratory, foundation	Department of health	Other 2/
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personnel	54.1	50.3	54.1	60.1	55.0	59.4	71.3	61.7
Principal investigator	5.5	4.1	9.9	8.1	3.4	4.2	0	13.6
Other professional	24.8	19.9	29.4	29.9	23.5	29.4	37.0	40.1
Nonprofessional	23.8	26.3	14.8	22.1	28.1	25.8	34.3	13.0
Permanent equipment	14.0	15.4	15.5	12.7	12.1	9.9	7.6	7.1
Items costing $2,499 and under	9.3	10.4	9.4	10.6	8.8	5.3	5.7	7.1
Items costing $2,500 and over	4.7	5.0	6.1	2.1	3.3	4.6	1.9	0
Consumable supplies	13.7	15.7	12.8	10.6	10.5	15.0	5.8	5.7
Indirect costs	12.2	12.6	12.1	12.1	12.1	11.5	9.7	13.0
Travel	2.5	2.5	2.5	2.2	2.8	1.6	4.8	4.5
Domestic	2.1	2.1	2.1	2.1	2.2	1.3	4.6	4.3
Foreign	.4	.4	.4	.1	.6	.3	.2	.2
Alteration and renovation	.3	.3	.3	.4	.6	.1	0	.5
All other	3.2	3.2	2.7	1.9	6.9	2.5	.8	2.5
Total dollars expended by all research grant projects of given type of institution	$17,209,700	$8,295,500	$3,648,000	$863,300	$1,842,900	$1,726,000	$604,200	$229,800

1/ Agriculture, dental, veterinary medicine, public health, and engineering.

2/ See text.

Source: NIH. OD. OPP. DAS. Report No. 16.

Appendix Table 12
New Research Grant Projects,1/ Numbers Surviving, and Survival Rates
by Year of NIH Award Support: Fiscal Years 1951-1962

Year of award support 2/	Fiscal year of first (or original) award											
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
	Number of research grant projects											
First year	686	783	674	969	1,024	855	2,915	2,160	2,725	3,190	3,344	3,333
Second year	441	665	585	829	908	724	2,146	1,742	2,502	2,963	3,042	
Third year	340	436	480	627	740	620	1,696	1,551	2,097	2,465		
Fourth year	250	310	325	476	564	509	1,334	1,120	1,479			
Fifth year	189	246	279	402	501	424	1,121	936				
Sixth year	142	209	219	344	399	338	826					
Seventh year	115	179	186	290	326	257						
Eighth year	101	159	161	242	273							
Ninth year	91	130	137	205								
Tenth year	79	119	121									
Eleventh year	69	109										
Twelfth year	55											
	Survival rate of NIH support of research grant projects											
First year	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.0	100.0	100.0
Second year	64.3	84.9	86.8	85.6	88.7	84.7	73.6	80.6	91.8	92.9	91.0	
Third year	49.6	55.7	71.2	64.7	72.3	72.5	58.2	71.8	77.0	77.3		
Fourth year	36.4	39.6	48.2	49.1	55.1	59.5	45.8	51.9	54.3			
Fifth year	27.6	31.4	41.4	41.5	48.9	49.6	38.5	43.3				
Sixth year	20.7	26.7	32.5	35.5	39.0	39.5	28.3					
Seventh year	16.8	22.9	27.6	29.9	31.8	30.1						
Eighth year	14.7	20.3	23.9	25.0	26.7							
Ninth year	13.3	16.6	20.3	21.2								
Tenth year	11.5	15.2	18.0									
Eleventh year	10.1	13.9										
Twelfth year	8.0											

1/ See "Introduction" and Appendix to report No. 16 for exclusions and correction factors. Second year awards for the original projects in fiscal year 1961 include some C1's whose original grants were not awarded in fiscal year 1961.
2/ Denoted by the award; i.e., the first year by the original or parent grant award; the second year, by the award of the C1; etc.
Source: OD. OPP. DAS. Report No. 16.

Appendix Table 13

Distribution of Funds, by Type of NIH Training Grant Award for Each Institute[1/]
Graduate and Undergraduate. United States and Foreign. Fiscal Years 1954-1964

Fiscal year and type of training grant	All Institutes	Distribution of graduate and undergraduate training grant funds by Institute (total funds shown are in millions of dollars)								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Funds, 1954-1964	$746.7	$30.4	$56.7	$3.5	$56.3	$19.9	$154.1	$81.6	$287.9	$56.3
Graduate	655.1[2/]	30.4	56.7	3.5	30.0	16.2	154.1	55.7	252.2	56.3
Undergraduate	91.6		0	0	26.3	3.7	0	25.9	35.7	0
Percent, 1954-1964	100%	4	8	0.0	7	3	21	11	39	7
Graduate	100%	5	9	0.0	5	2	24	8	38	9
Undergraduate	100%	0	0	0	28	4	0	28	40	0
		Percentage distribution for each fiscal year								
1964	100%	5	8	2	5	3	21	8	41	7
Graduate	100%	5	9	2	4	3	23	7	39	8
Undergraduate	100%	0	0	0	17	0	0	16	67	0
1963	100%	5	9	0	5	4	26	9	36	6
Graduate	100%	5	10	0	4	3	29	8	34	7
Undergraduate	100%	0	0	0	18	16	0	18	48	0
1962	100%	5	8	0	7	3	26	10	34	7
Graduate	100%	5	9	0	5	2	29	9	33	8
Undergraduate	100%	0	0	0	22	14	0	21	43	0
1961	100%	4	7	0	7	3	25	11	37	6
Graduate	100%	5	7	0	5	3	26	10	37	7
Undergraduate	100%	0	0	0	32	0	0	32	36	0
1960	100%	5	8	0	8	1	18	12	38	10
Graduate	100%	5	9	0	5	2	20	10	38	11
Undergraduate	100%	0	0	0	33	0	0	33	34	0
1959	100%	3	8	0	11	1	13	15	40	9
Graduate	100%	4	10	0	6	1	16	11	41	11
Undergraduate	100%	0	0	0	33	0	0	33	33	0
1958	100%	2	6	0	12	1	9	13	46	11
Graduate	100%	2	8	0	5	2	12	7	50	14
Undergraduate	100%	0	0	0	35	0	0	35	30	0
1957	100%	0	6	0	14	2	9	14	44	11
Graduate	100%	0	8	0	7	2	12	8	48	15
Undergraduate	100%	0	0	0	33	0	0	33	33	0
1956	100%	0	5	0	17	0	0	20	47	11
Graduate	100%	0	9	0	0	0	0	5	66	20
Undergraduate	100%	0	0	0	40	0	0	40	20	0
1955	100%	0	0.0	0	22	0	0	23	45	10
Graduate	100%	0	0.0	0	0	0	0	4	77	19
Undergraduate	100%	0	0	0	45	0	0	43	12	0
1954	100%	0	0.0	0	23	0	0	28	45	4
Graduate	100%	0	0.0	0	2	0	0	12	78	8
Undergraduate	100%	0	0	0	45	0	0	43	12	0

See appendix table 14 for footnotes and source.

Appendix Table 14

Number of NIH Training Grants Awarded for Each Institute/Division, by Size of Grant[1/] Graduate and Undergraduate. United States and Foreign. Fiscal Years 1954 and 1962-1964

Size of training grant	All Institutes	Training grants by Institute								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Fiscal Year 1964										
Total	4,346	182	358	77	249	104	699	369	2,004	304
Under $20,000	1,174	33	72	12	79	20	85	57	732	84
20,000 - 49,999	2,087	88	216	41	116	52	328	240	865	141
50,000 - 99,999	880	53	65	18	39	30	232	65	310	68
1000,000 or more	205	8	5	6	15	2	54	7	97	11
Fiscal Year 1963										
Total	4,114	167	425	0	275	138	760	389	1,716	244
Under $20,000	1,334	35	145	0	118	19	97	79	794	47
20,000 - 49,999	1,940	87	227	0	113	85	375	252	658	143
50,000 - 99,999	702	41	51	0	34	30	236	52	207	51
100,000 or more	138	4	2	0	10	4	52	6	57	3
Fiscal Year 1962										
Total	3,697	168	329	0	340	155	683	376	1,395	251
Under $20,000	1,369	51	99	0	182	71	110	86	686	84
20,000 - 49,999	1,693	86	194	0	118	71	350	247	506	121
50,000 - 99,999	540	28	35	0	31	12	191	37	162	44
100,000 or more	95	3	1	0	9	1	32	6	41	2
Fiscal Year 1954										
Total	565	0	1	0	136	0	0	129	276	23
Under $20,000	341	0	1	0	54	0	0	51	218	17
20,000 - 49,999	215	0	0	0	82	0	0	7	51	6
50,000 - 99,999	7	0	0	0	0	0	0	2	5	0
100,000 or more	2	0	0	0	0	0	0	0	2	0

1/ Supplemental grants included in count of grants. Excludes chairman grants.

Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 15

Distribution of Funds, by Size of NIH Training Grant Award for Each Institute/Division[1/]
Graduate and Undergraduate . United States and Foreign. Fiscal Years 1954 and 1962-1964

Size of training grant	All Institutes	Training grant funds by institute										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
Fiscal Year 1964												
Dollars	$165,907,872	$7,936,725	$12,863,571	$3,475,779	$8,307,614	$4,366,659	$35,173,043	$13,326,145	$68,970,181	$11,488,155	$ 0	$ 0
Percent	100	100	100	100	100	100	100	100	100	100	0	0
Under $20,000	7	5	6	4	6	5	3	5	10	8	0	0
20,000 - 49,999	40	38	56	43	37	41	31	55	39	41	0	0
50,000 - 99,999	36	45	33	34	33	47	46	33	30	40	0	0
100,000 or more	17	12	5	19	24	7	20	7	21	11	0	0
Fiscal Year 1963												
Dollars	$140,639,154	$6,489,241	$12,258,775	$ 0	$7,441,414	$5,857,966	$36,477,937	$12,565,856	$50,410,522	$9,137,443	$ 0	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	0	0
Under $20,000	10	6	13	0	9	4	3	7	16	6	0	0
20,000 - 49,999	44	45	59	0	41	52	35	61	40	53	0	0
50,000 - 99,999	33	42	26	0	31	34	44	26	28	37	0	0
100,000 or more	13	7	2	0	19	10	18	6	16	4	0	0
Fiscal Year 1962												
Dollars	$115,857,328	$5,584,481	$9,507,842	$ 0	$7,881,408	$4,014,818	$30,151,002	$11,482,863	$39,374,975	$7,859,939	$ 0	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	0	0
Under $20,000	12	11	14	0	16	24	4	8	17	9	0	0
20,000 - 49,999	46	51	63	0	41	53	39	65	40	52	0	0
50,000 - 99,999	31	32	22	0	27	20	44	21	28	36	0	0
100,000 or more	11	6	1	0	16	3	13	6	15	3	0	0
Fiscal Year 1954												
Dollars	$ 9,813,011	$ 0	$ 9,250	$ 0	$2,349,640	$ 0	$ 0	$2,656,459	$4,397,808	$ 399,854	$ 0	$ 0
Percent	100	0	100	0	100	0	0	100	100	100	0	0
Under $20,000	34	0	100	0	13	0	0	22	51	61	0	0
20,000 - 49,999	58	0	0	0	87	0	0	72	36	39	0	0
50,000 - 99,999	5	0	0	0	0	0	0	6	7	0	0	0
100,000 or more	3	0	0	0	0	0	0	0	6	0	0	0

1/ Supplemental grants included in count of grants. Excludes chairman grants.
Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 16

Funds, by Size of NIH Training Grant Awarded for Each Institute/Division 1/
Graduate and Undergraduate. United States and Foreign. Fiscal Years 1954 and 1962-1964

Size of training grant	All Institutes	Training grant funds by Institute										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
Fiscal Year 1964												
Total	$165,907,872	$7,936,725	$12,863,571	$3,475,779	$8,307,614	$4,366,659	$35,173,043	$13,326,145	$68,970,181	$11,488,155	$ 0	$ 0
Under $20,000	11,583,258	386,912	853,104	136,569	499,331	221,514	1,051,153	706,707	6,856,738	871,230	0	0
20,000 - 49,999	67,085,833	2,998,402	7,189,844	1,508,498	3,109,052	1,796,111	11,106,970	7,384,570	27,274,468	4,717,918	0	0
50,000 - 99,999	59,240,975	3,561,227	4,211,067	1,170,324	2,698,297	2,046,200	16,126,865	4,320,232	20,512,653	4,594,110	0	0
100,000 or more	27,997,806	990,184	609,556	660,388	2,000,934	302,834	6,888,055	914,636	14,326,322	1,304,897	0	0
Fiscal Year 1963												
Total	$140,639,154	$6,489,241	$12,258,775	$ 0	$7,441,414	$5,857,966	$36,477,937	$12,565,856	$50,410,522	$9,137,443	$ 0	$ 0
Under $20,000	13,577,415	425,648	1,607,184	0	703,422	245,445	1,310,302	931,385	7,810,798	543,231	0	0
20,000 - 49,999	61,571,354	2,920,621	7,178,740	0	3,048,999	3,051,686	12,640,530	7,604,038	20,275,465	4,851,275	0	0
50,000 - 99,999	46,980,629	2,704,124	3,187,769	0	2,288,978	1,993,164	16,005,094	3,301,483	14,108,595	3,391,422	0	0
100,000 or more	18,509,756	438,848	285,082	0	1,400,015	567,671	6,522,011	728,950	8,215,664	351,515	0	0
Fiscal Year 1962												
Total	$115,857,328	$5,584,481	$9,507,842	$ 0	$7,881,408	$4,014,818	$30,151,002	$11,482,863	$39,374,975	$7,859,939	$ 0	$ 0
Under $20,000	13,868,055	594,001	1,334,031	0	1,290,913	946,449	1,285,213	983,721	6,741,559	692,168	0	0
20,000 - 49,999	53,199,577	2,865,876	6,005,517	0	3,230,533	2,118,580	11,744,522	7,438,026	15,719,938	4,076,585	0	0
50,000 - 99,999	36,080,355	1,797,975	2,051,838	0	2,109,615	810,909	13,135,537	2,373,688	10,924,670	2,876,123	0	0
100,000 or more	12,709,341	326,629	116,456	0	1,250,347	138,880	3,985,730	687,428	5,988,808	215,063	0	0
Fiscal Year 1954												
Total	$ 9,813,011	$ 0	$ 9,250	$ 0	$2,349,640	$ 0	$ 0	$ 2,656,459	$ 4,397,808	$ 399,854	$ 0	$ 0
Under $20,000	3,393,990	0	9,250	0	306,812	0	0	588,790	2,246,524	242,614	0	0
20,000 - 49,999	5,702,885	0	0	0	2,042,828	0	0	1,921,310	1,581,507	157,240	0	0
50,000 - 99,999	459,763	0	0	0	0	0	0	146,359	313,404	0	0	0
100,000 or more	256,373	0	0	0	0	0	0	0	256,373	0	0	0

1/ Supplemental grants included in count of grants. Excludes chairman grants.
Source: DRG, SA8, DP computer printout for each fiscal year.

Appendix Table 17

Funds, by Type of NIH Training Grant Award for Each Institute[1/]

Graduate and Undergraduate. United States and Foreign. Fiscal Years 1954-1964

Fiscal year and type of training grant	All Institutes	Graduate and undergraduate training grant funds by Institute (millions of dollars)								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Funds, 1954-1964	$746.7	$30.4	$56.7	$3.5	$56.3	$19.9	$154.1	$81.6	$287.9	$56.3
Graduate	655.1[2/]	30.4	56.7	3.5	30.0	16.2	154.1	55.7	252.2	56.3
Undergraduate	91.6	0	0	0	26.3	3.7	0	25.9	35.7	0
1964	$165.9	$ 7.9	$12.9	$3.5	$ 8.3	$ 4.4	$ 35.2	$13.3	$ 69.0	$11.5
Graduate	151.1	7.9	12.9	3.5	5.8	4.4	35.2	10.9	59.1	11.5
Undergraduate	14.8	0	0	0	2.5	0	0	2.4	9.9	0
1963[1/]	$140.6	$ 6.5	$12.3	$ 0	$ 7.4	$ 5.9	$ 36.5	$12.6	$ 50.4	$ 9.1
Graduate	127.1	6.5	12.3	0	5.0	3.7	36.5	10.1	43.9	9.1
Undergraduate	13.5	0	0	0	2.4	2.1	0	2.5	6.5	0
1962	$115.9	$ 5.6	$ 9.5	$ 0	$ 7.9	$ 4.0	$ 30.2	$11.5	$ 39.4	$ 7.9
Graduate	104.3	5.6	9.5	0	5.3	2.4	30.2	9.1	34.4	7.9
Undergraduate	11.6	0	0	0	2.6	1.6	0	2.4	5.0	0
1961	$108.4	$ 4.8	$ 7.7	$ 0	$ 7.2	$ 3.0	$ 26.9	$12.2	$ 39.8	$ 6.8
Graduate	101.0	4.8	7.7	0	4.8	3.0	26.9	9.8	37.2	6.8
Undergraduate	7.4	0	0	0	2.4	0	0	2.4	2.6	0
1960	$ 73.7	$ 3.5	$ 5.9	$ 0	$ 5.9	$ 1.1	$ 13.3	$ 8.9	$ 27.8	$ 7.3
Graduate	66.4	3.5	5.9	0	3.5	1.1	13.3	6.5	25.3	7.3
Undergraduate	7.3	0	0	0	2.4	0	0	2.4	2.5	0
1959	$ 48.9	$ 1.5	$ 4.0	$ 0	$ 5.1	$ .6	$ 6.5	$ 7.2	$ 19.6	$ 4.4
Graduate	41.7	1.5	4.0	0	2.7	.6	6.5	4.8	17.2	4.4
Undergraduate	7.2	0	0	0	2.4	0	0	2.4	2.4	0
1958	$ 31.9	$ .6	$ 2.1	$ 0	$ 3.7	$ .4	$ 3.0	$ 4.1	$ 14.6	$ 3.4
Graduate	25.0	.6	2.1	0	1.3	.4	3.0	1.7	12.5	3.4
Undergraduate	6.9	0	0	0	2.4	0	0	2.4	2.1	0
1957	$ 27.6	$ 0	$ 1.6	$ 0	$ 3.9	$ .5	$ 2.5	$ 4.0	$ 12.1	$ 3.0
Graduate	20.4	0	1.6	0	1.5	.5	2.5	1.6	9.7	3.0
Undergraduate	7.2	0	0	0	2.4	0	0	2.4	2.4	0
1956	$ 13.5	$ 0	$ .7	$ 0	$ 2.3	$ 0	$ 0	$ 2.7	$ 6.2	$ 1.5
Graduate	7.8	0	.7	0	0	0	0	.4	5.1	1.5
Undergraduate	5.7	0	0	0	2.3	0	0	2.3	1.1	0
1955	$ 10.3	$ 0	$ 0	$ 0	$ 2.3	$ 0	$ 0	$ 2.4	$ 4.6	$ 1.0
Graduate	5.2	0	0	0	0	0	0	.2	4.0	1.0
Undergraduate	5.1	0	0	0	2.3	0	0	2.2	.6	0
1954	$ 9.8	$ 0	$ 0	$ 0	$ 2.3	$ 0	$ 0	$ 2.7	$ 4.4	$ .4
Graduate	4.9	0	0	0	.1	0	0	.6	3.8	.4
Undergraduate	4.9	0	0	0	2.2	0	0	2.1	.6	0

1/ Data for 1963 are exclusive of Scientific Evaluation grants as follows: 10 graduate training grants amounting to $465,000 and 1 undergraduate training grant for $18,477.

2/ Subtotals will not add to total because of rounding.

Sources: fiscal years 1954-1957 - listings from the separate Institutes, and DRG. SAB. DP. Computer printout for each fiscal year.
fiscal years 1958-1961 - Public Health Service Grants and Awards publications for each year.

Appendix Table 18

Distribution of NIH Funds, Through Graduate and Undergraduate Training Grant Programs for Each Institute
United States and Foreign. Fiscal Years 1954-1964

Fiscal year and type of training grant	All Institutes	Distribution of graduate and undergraduate training grant funds by Institute (total funds shown are in millions of dollars)								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Funds, 1954-1964	$746.7	$30.4	$56.7	$3.5	$56.3	$19.9	$154.1	$81.6	$287.9	$56.3
Graduate	655.1	30.4	56.7	3.5	30.0	16.2	154.1	55.7	252.2	56.3
Undergraduate	91.6	0	0	0	26.3	3.7	0	25.9	35.7	0
Percent, 1954-1964	100%	100%	100%	100%	100%	100%		100%	100%	100%
Graduate	88	100	100	100	53	81	100	68	88	100
Undergraduate	12	0	0	0	47	19	0	32	12	0
		Percentage distribution for each fiscal year								
1964	100	100	100	100	100	100	100	100	100	100
Graduate	91	100	100	100	70	100	100	82	86	100
Undergraduate	9	0	0	0	30	0	0	18	14	0
1963	100	100	100	0	100	100	100	100	100	100
Graduate	90	100	100	0	68	64	100	80	87	100
Undergraduate	10	0	0	0	32	36	0	20	13	0
1962	100	100	100	0	100	100	100	100	100	100
Graduate	90	100	100	0	67	60	100	79	87	100
Undergraduate	10	0	0	0	33	40	0	21	13	0
1961	100	100	100	0	100	100	100	100	100	100
Graduate	93	100	100	0	67	100	100	80	93	100
Undergraduate	7	0	0	0	33	0	0	20	7	0
1960	100	100	100	0	100	100	100	100	100	100
Graduate	90	100	100	0	59	100	100	73	91	100
Undergraduate	10	0	0	0	41	0	0	27	9	0
1959	100	100	100	0	100	100	100	100	100	100
Graduate	85	100	100	0	53	100	100	67	88	100
Undergraduate	15	0	0	0	47	0	0	33	12	0
1958	100	100	100	0	100	100	100	100	100	100
Graduate	78	100	100	0	35	100	100	41	86	100
Undergraduate	22	0	0	0	65	0	0	59	14	0
1957	100	0	100	0	100	100	100	100	100	100
Graduate	74	0	100	0	38	100	100	40	80	100
Undergraduate	26	0	0	0	62	0	0	60	20	0
1956	100	0	100	0	100	0	0	100	100	100
Graduate	58	0	100	0	0	0	0	15	82	100
Undergraduate	42	0	0	0	100	0	0	85	18	0
1955	100	0	100	0	100	0	0	100	100	100
Graduate	50	0	100	0	0	0	0	8	87	100
Undergraduate	50	0	0	0	100	0	0	92	13	0
1954	100	0	100	0	100	0	0	100	100	100
Graduate	50	0	100	0	0	0	0	22	86	100
Undergraduate	50	0	0	0	4	0	0	78	14	0

See appendix table 14 for footnotes and source.

Appendix Table 19

Distribution of NIH Training Grants Awarded for Each Institute/Division, by Size of Grant Graduate 1/. United States and Foreign. Fiscal Years 1954 and 1962-1964

Size of training grant	All institutes	Graduate training grants by Institute								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Fiscal Year 1964										
Number	3,666	182	358	77	109	104	699	265	1,568	304
Percent	100	100	100	100	100	100	100	100	100	100
Under $20,000	25	18	20	16	25	19	12	16	35	28
20,000 - 49,999	45	48	60	53	25	50	47	57	40	46
50,000 - 99,999	24	29	18	23	36	29	33	24	19	22
100,000 or more	6	5	2	8	14	2	8	3	6	4
Fiscal Year 1963										
Number	3,439	167	425	0	135	84	760	285	1,339	244
Percent	100	100	100	0	100	100	100	100	100	100
Under $20,000	30	21	34	0	50	18	13	23	42	19
20,000 - 49,999	46	52	53	0	18	50	49	57	39	59
50,000 - 99,999	20	25	12	0	25	28	31	18	15	21
100,000 or more	4	2	1	0	7	4	7	2	4	1
Fiscal Year 1962										
Number	3,095	168	329	0	195	69	683	273	1,127	251
Percent	100	100	100	0	100	100	100	100	100	100
Under $20,000	35	30	30	0	66	29	16	26	46	33
20,000 - 49,999	45	51	59	0	14	54	51	58	36	48
50,000 - 99,999	17	17	11	0	16	16	28	14	14	18
100,000 or more	3	2	0.0	0	4	1	5	2	4	1
Fiscal Year 1954										
Number	304	0	1	0	6	0	0	41	233	23
Percent	100	0	100	0	100	0	0	100	100	100
Under $20,000	78	0	100	0	83	0	0	95	75	74
20,000 - 49,999	19	0	0	0	17	0	0	0	22	26
50,000 - 99,999	2	0	0	0	0	0	0	5	2	0
100,000 or more	1	0	0	0	0	0	0	0	1	0

1/. Supplemental grants included in count of grants. Excludes chairman grants.
Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 20
Number of NIH Training Grants Awarded for Each Institute/Division, by Size of Grant 1/.
Graduate. United States and Foreign. Fiscal Years 1954 and 1962-1964.

Size of training grant	All institutes	Graduate training grants by Institute								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
					Fiscal Year 1964					
Total	3,666	182	358	77	109	104	699	265	1,568	304
Under $20,000	918	33	72	12	28	20	85	42	542	84
20,000 - 49,000	1,668	88	216	41	27	52	328	151	624	141
50,000 - 99,999	875	53	65	18	39	30	232	65	305	68
100,000 or more	205	8	5	6	15	2	54	7	97	11
					Fiscal Year 1963					
Total	3,439	167	425	0	135	84	760	285	1,339	244
Under $20,000	1,030	35	145	0	67	15	97	64	560	47
20,000 - 49,999	1,579	87	227	0	24	42	375	163	518	143
50,000 - 99,999	693	41	51	0	34	24	236	52	204	51
100,000 or more	137	4	2	0	10	3	52	6	57	3
					Fiscal Year 1962					
Total	3,095	168	329	0	195	69	683	273	1,127	251
Under $20,000	1,085	51	99	0	128	20	110	72	521	84
20,000 - 49,999	1,378	86	194	0	27	37	350	158	405	121
50,000 - 99,999	537	28	35	0	31	11	191	37	160	44
100,000 or more	95	3	1	0	9	1	32	6	41	2
					Fiscal Year 1954					
Total	304	0	1	0	6	0	0	41	233	23
Under $20,000	237	0	1	0	5	0	0	39	175	17
20,000 - 49,999	58	0	0	0	1	0	0	0	51	6
50,000 - 99,999	7	0	0	0	0	0	0	2	5	0
100,000 or more	2	0	0	0	0	0	0	0	2	0

1/. Supplemental grants included in count of grants. Excludes chairman grants.
Source: DRG. SAB. DP. Computer printout for each fiscal year.

Appendix Table 21
Distribution of Funds, By Size of NIH Training Grants Awarded for Each Institute/Division[1/]
Graduate-United States and Foreign-Fiscal Years 1954 and 1962 - 1964

Size of training grant	All Institutes	Training grant funds by Institute										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
Fiscal Year 1964												
Total	$151,101,372	$7,936,725	$12,863,571	$3,475,779	$5,830,136	$4,366,659	$35,173,043	$10,875,246	$59,092,058	$11,488,155	$ 0	$ 0
Percent	100	100	100	100	100	100	100	100	100	100	0	0
Under $20,000	6	5	6	4	4	5	3	4	8	8	0	0
20,000 - 49,999	36	38	56	43	15	41	31	48	34	41	0	0
50,000 - 99,999	39	45	33	34	46	47	46	40	34	40	0	0
100,000 or more	19	12	5	19	35	7	20	8	24	11	0	0
Fiscal Year 1963												
Total	$127,094,276	$6,489,241	$12,258,775	$ 0	$4,962,187	$3,712,208	$36,477,937	$10,114,936	$43,941,549	$ 9,137,443	$ 0	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	0	0
Under 20,000	8	6	13	0	9	5	3	7	12	6	0	0
20,000 - 49,999	41	45	59	0	17	40	35	53	37	53	0	0
50,000 - 99,999	37	42	26	0	46	43	44	33	32	37	0	0
100,000 or more	14	7	2	0	28	12	18	7	19	4	0	0
Fiscal Year 1962												
Total	$104,279,812	$5,584,481	$ 9,507,842	$ 0	$5,316,611	$2,395,621	$30,151,002	$ 9,047,112	$34,417,204	$ 7,859,939	$ 0	$ 0
Percent	100	100	100	0	100	100	100	100	100	100	0	0
Under $20,000	10	11	14	0	19	10	4	8	14	9	0	0
20,000 - 49,999	43	51	63	0	18	52	39	58	37	52	0	0
50,000 - 99,999	35	32	22	0	40	32	44	26	31	36	0	0
100,000 or more	12	6	1	0	23	6	13	8	18	3	0	0
Fiscal Year 1954												
Total	$ 4,836,571	$ 0	$ 9,250	$ 0	$ 69,267	$ 0	$ 0	$ 553,841	$ 3,804,359	$ 399,854	$ 0	$ 0
Percent	100	0	100	0	100	0	0	100	100	100	0	0
Under $20,000	49	0	100	0	60	0	0	74	43	61	0	0
20,000 - 49,999	37	0	0	0	40	0	0	0	42	39	0	0
50,000 - 99,999	9	0	0	0	0	0	0	26	8	0	0	0
100,000 or more	5	0	0	0	0	0	0	0	7	0	0	0

1/ Supplemental grants included in count of grants. Excludes chairman grants.

Source: DRG, SAB, DP Computer Printout for Each Fiscal Year.

Appendix Table 22

Funds, by size of NIH Training Grant Awarded for Each Institute/Division 1/
Graduate. United States and Foreign. Fiscal Years 1954 and 1962-1964

Size of training grant	All Institutes	Training grant funds by Institute										
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB	DRFR	OIR
Fiscal Year 1964												
Total	$151,101,372	$7,936,725	$12,863,571	$3,475,779	$5,830,136	$4,366,659	$35,173,043	$10,875,246	$59,092,058	$11,488,155	$ 0	$ 0
Under $20,000	9,000,933	386,912	853,104	136,569	244,520	221,514	1,051,153	480,274	4,755,657	871,230	0	0
20,000 - 49,999	55,139,111	2,998,402	7,189,844	1,508,498	886,385	1,796,111	11,106,970	5,160,104	19,774,879	4,717,918	0	0
50,000 - 99,999	58,963,522	3,561,227	4,211,067	1,170,324	2,698,297	2,046,200	16,126,865	4,320,232	20,235,200	4,594,110	0	0
100,000 or more	27,997,806	990,184	609,556	660,388	2,000,934	302,834	6,888,055	914,636	14,326,322	1,304,897	0	0
Fiscal Year 1963												
Total	$127,094,276	$6,489,241	$12,258,775	0	$4,962,187	$3,712,208	$36,477,937	$10,114,936	$43,941,549	$ 9,137,443	0	0
Under $20,000	10,686,273	425,648	1,607,184	0	448,579	181,728	1,310,302	704,952	5,464,649	543,231	0	0
20,000 - 49,999	51,598,270	2,920,621	7,178,740	0	824,615	1,471,538	12,640,530	5,379,551	16,331,400	4,851,275	0	0
50,000 - 99,999	46,401,035	2,704,124	3,187,769	0	2,288,978	1,592,329	16,005,094	3,301,483	13,929,836	3,391,422	0	0
100,000 or more	18,408,698	438,848	285,082	0	1,400,015	466,613	6,522,011	728,950	8,215,664	351,515	0	0
Fiscal Year 1962												
Total	$104,279,812	$5,584,481	$ 9,507,842	0	$5,316,611	$2,395,621	$30,151,002	$ 9,047,112	$34,417,204	$ 7,859,939	0	0
Under $20,000	10,811,057	594,001	1,334,031	0	1,005,576	246,135	1,285,213	772,288	4,881,645	692,168	0	0
20,000 - 49,999	44,866,190	2,865,876	6,005,517	0	951,073	1,253,697	11,744,522	5,213,708	12,755,212	4,076,585	0	0
50,000 - 99,999	35,893,224	1,797,975	2,051,838	0	2,109,615	756,909	13,135,537	2,373,688	10,791,539	2,876,123	0	0
100,000 or more	12,709,341	326,629	116,456	0	1,250,347	138,880	3,985,730	687,428	5,988,808	215,063	0	0
Fiscal Year 1954												
Total	$ 4,836,571	$ 0	$ 9,250	$ 0	$ 69,267	$ 0	$ 0	$ 553,841	$ 3,804,359	$ 399,854	$ 0	$ 0
Under $20,000	2,353,896	0	9,250	0	41,475	0	0	407,482	1,653,075	242,614	0	0
20,000 - 49,999	1,766,539	0	0	0	27,792	0	0	0	1,581,507	157,240	0	0
50,000 - 99,999	459,763	0	0	0	0	0	0	146,359	313,404	0	0	0
100,000 or more	256,373	0	0	0	0	0	0	0	256,373	0	0	0

1/ Supplemental grants included in count of grants. Excludes chairman grants.

Source: DRG. SAB. DP. Computer printout for each fiscal year

Note: With few exceptions these grants were conducted in the U.S.

Appendix Table 23

Distribution of Funds Expended Under NIH Graduate Training Grants for Each Institute, by Expenditure Category[1/]
For Direct and Indirect Expenditures and for Direct Expenditures Only
United States and Foreign. Fiscal Year 1961
(provisional data)

Expenditure category	All Institutes	Direct and indirect expenditures by Institute							
		NIAID	NIAMD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Funds expended	$88,106,790	$4,148,050	$6,854,696	$2,999,742	$2,086,498	$23,786,487	$9,085,564	$33,077,567	$6,068,186
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Trainee stipends	44.1	38.4	42.3	46.2	50.5	42.4	46.2	47.0	35.2
Salaries of personnel	31.1	20.6	36.4	20.9	19.0	21.1	26.4	39.9	39.4
Equipment (permanent)	6.7	14.4	5.4	10.1	8.1	12.3	7.6	1.0	8.5
Consumable supplies	4.6	9.5	5.0	8.6	4.7	7.0	6.6	1.1	5.6
Travel	2.0	5.1	2.3	1.9	2.5	2.3	2.5	1.2	1.6
Domestic	(1.7)	(2.0)	(2.2)	(1.6)	(2.5)	(2.1)	(2.0)	(1.1)	(1.5)
Foreign	(.3)	(3.1)	(.1)	(.3)	(0.0)	(.2)	(.5)	(.1)	(.1)
Other expenditures	5.8	5.2	1.3	5.5	8.4	8.1	3.6	6.3	2.5
Indirect costs	5.7	6.8	7.3	6.8	6.8	6.8	7.1	3.5	7.2

Expenditure category	All Institutes	Direct expenditures by Institute							
		NIAID	NIAMD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Funds expended	$83,115,162	$3,864,508	$6,355,583	$2,796,084	$1,945,314	$22,166,603	$8,443,296	$31,910,075	$5,633,699
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Trainee stipends	46.8	41.2	45.7	49.6	54.1	45.4	49.7	48.7	38.0
Salaries of personnel	32.9	22.1	39.2	22.4	20.4	22.7	28.4	41.3	42.4
Equipment (permanent)	7.1	15.5	5.8	10.9	8.7	13.2	8.2	1.1	9.1
Consumable supplies	4.9	10.2	5.4	9.2	5.1	7.5	7.1	1.1	6.1
Travel	2.1	5.4	2.5	2.0	2.7	2.5	2.7	1.3	1.7
Domestic	(1.8)	(2.1)	(2.3)	(1.7)	(2.7)	(2.3)	(2.2)	(1.2)	(1.6)
Foreign	(.3)	(3.3)	(.2)	(.3)	(0.0)	(.2)	(.5)	(.1)	(.1)
Other expenditures	6.2	5.6	1.4	5.9	9.0	8.7	3.9	6.5	2.7

1/ Excludes graduate training grant awards under the Cancer Clinical Training Program and excludes Chairman grants. Funds expended may include those awarded under the parent grant for fiscal year 1961, applicable supplements, and carry over funds allowed from previous years.

Source: Expenditures Report for each project.

Appendix Table 24
NIH Graduate Training Grant Funds Available for Expenditure, Funds Expended and Funds Unexpended, by NIH Institute
United States and Foreign. Fiscal Year 1961
(provisional data)

Expenditure information	All Institutes	Funds by Institute							
		NIAID	NIAMD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
					Basic data				
(1) Number of grants	2,331	121	262	54	43	514	225	934	178
(2) Funds available	$104,758,040	$5,287,159	$8,107,441	$3,708,720	$2,316,088	$29,399,730	$10,246,094	$38,101,532	$7,591,276
(3) Funds expended	88,106,790	4,148,050	6,854,696	2,999,742	2,086,498	23,786,487	9,085,564	33,077,567	6,068,186
(4) Unexpended funds (2) - (3)	16,651,250	1,139,109	1,252,745	708,978	229,590	5,613,243	1,160,530	5,023,965	1,523,090
Percent (4) ÷ (2)	15.9%	21.5%	15.5%	19.1%	9.9%	19.1%	11.3%	13.2%	13.5%
					Average dollar value per grant				
(5) Funds available (2) ÷ (1)	44,941	43,696	30,944	68,680	53,863	57,198	45,538	40,794	42,648
(6) Funds expended (3) ÷ (1)	37,798	34,281	26,163	55,551	48,523	46,277	40,380	35,415	34,091
(7) Unexpended funds (4) ÷ (1)	7,143	9,414	4,781	13,129	5,339	10,921	5,158	5,379	8,557
(8) Carry-over permitted	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
(9) Relationship of unexpended funds to carry-over permitted (7) - (8)	+2,143	+4,414	-219	+8,129	+339	+5,921	+158	+379	+3,557

Source: Expenditures Report for each project.

Appendix Table 25

Average Cost per NIH Graduate Training Grant and per Trainee, for Each Institute, by Expenditure Category[1/]
United States and Foreign. Fiscal Year 1961
(provisional data)

Expenditure category	All Institutes	Data for each Institute							
		NIAID	NIAMD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Total grants	2,331[1/]	121	262	54	43	514	225	934	178
Percent	100.0	5.2	11.2	2.3	1.8	22.1	9.7	40.1	7.6
Total trainees	14,888[2/]	666	841	560	260	4,965	1,572	5,179	845
Percent	100.0	4.5	5.6	3.8	1.7	33.3	10.6	34.8	5.7
Funds expended	$88,106,790[3/]	$4,148,050	$6,854,696	$2,999,742	$2,086,498	$23,786,487	$9,085,564	$33,077,567	$6,068,186
Percent	100.0	4.7	7.8	3.4	2.4	27.0	10.3	37.5	6.9
				Average cost per graduate training grant					
All expenditures	$37,798	$34,281	$26,163	$55,551	$48,523	$46,277	$40,380	$35,415	$34,091
Trainee stipends	16,682	13,159	11,076	25,663	24,488	19,596	18,644	16,645	12,014
Salaries of personnel	11,741	7,050	9,512	11,605	9,238	9,763	10,677	14,121	13,422
Equipment (permanent)	2,540	4,954	1,403	5,644	3,947	5,704	3,070	368	2,884
Consumable supplies	1,742	3,252	1,315	4,759	2,280	3,241	2,668	384	1,931
Travel	753	1,740	605	1,051	1,202	1,068	1,022	431	546
Domestic	(630)	(668)	(569)	(896)	(1,190)	(968)	(820)	(391)	(520)
Foreign	(123)	(1,072)	(36)	(155)	(12)	(100)	(202)	(40)	(26)
Other expenditures	2,198	1,783	347	3,057	4,085	3,754	1,446	2,215	854
Indirect costs	2,141	2,343	1,905	3,771	3,283	3,152	2,855	1,250	2,441
				Average cost per trainee on graduate training grant[4/]					
All expenditures	$5,918	$6,228	$8,151	$5,357	$8,025	$4,791	$5,780	$6,387	$7,181
Trainee stipends	2,612	2,391	3,451	2,475	4,050	2,029	2,668	3,002	2,531
Salaries of personnel	1,838	1,281	2,963	1,119	1,528	1,011	1,528	2,547	2,827
Equipment (permanent)	398	900	437	544	653	591	439	66	608
Consumable supplies	273	591	410	459	377	336	382	69	407
Travel	118	316	189	101	199	111	146	78	115
Domestic	(99)	(121)	(178)	(86)	(197)	(100)	(117)	(71)	(110)
Foreign	(19)	(195)	(11)	(15)	(2)	(11)	(29)	(7)	(5)
Other expenditures	344	324	108	295	676	389	207	400	180
Indirect costs	335	426	593	364	543	326	409	225	514

1/ Excludes graduate training grant awards under the Cancer Clinical Training program and excludes Chairman grants. Count of grants represents the number of parent grants during fiscal year 1961.

2/ Count of trainees represents the number of trainees reported on Expenditures Report, and may differ from counts recorded elsewhere.

3/ Funds expended may include those awarded under the parent grant for fiscal year 1961, applicable supplements, and carry over funds allowed from previous years.

4/ Includes full-time and part-time (short term) trainees.

Source: Expenditures Report for each project.

Appendix Table 26

Percent Distribution of Budgeted and Expended Funds and Percent Ratio by Cost Category
Grouped by Number of Years of NIH Support
158 DGMS Training Grants, Fiscal Year 1959

Cost category	First year (88 training grants)			Second year (41 training grants)			Third or more years (29 training grants)		
	(1) Percent budgeted	(2) Percent expended	Percent ratio $\frac{(2)\times 100}{(1)}$	(1) Percent budgeted	(2) Percent expended	Percent ratio $\frac{(2)\times 100}{(1)}$	(1) Percent budgeted	(2) Percent expended	Percent ratio $\frac{(2)\times 100}{(1)}$
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Salaries of personnel	20.5	17.3	84.4	23.7	22.4	94.5	30.9	25.9	83.8
Trainee costs	45.0	42.7	94.9	50.5	47.8	94.7	51.0	56.6	111.0
Equipment (permanent)	10.7	16.6	155.1	5.2	10.0	192.3	2.5	5.0	200.0
Consumable supplies	7.8	7.2	92.3	7.3	7.2	98.6	4.2	2.6	61.9
Travel costs	3.1	2.2	71.0	3.7	2.4	64.9	2.6	2.0	77.0
Other expenditures	5.8	7.3	125.9	2.4	3.0	125.0	2.2	1.8	81.8
Indirect costs	7.1	6.7	94.4	7.2	7.2	100.0	6.6	6.1	92.4

Source: NIH. OD. OPP. DAS. Report No. 11.

Appendix Table 27
Percent Distribution of Budgeted and Expended Funds and Percent Ratio by Cost Category
Grouped by Size of Training Grant Award
158 DGMS Training Grants, Fiscal Year 1959

Cost category	Under $20,000 (47 training grants)			$20,000-39,999 (63 training grants)			$40,000 and over (48 training grants)		
	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Salaries of personnel	18.3	18.4	100.5	24.5	23.3	95.1	24.7	20.0	81.0
Trainee costs	53.5	51.1	95.5	51.7	49.0	94.8	44.3	46.1	104.1
Equipment (permanent)	5.6	9.0	160.7	5.4	10.5	194.4	8.8	13.1	148.9
Consumable supplies	6.8	7.3	107.4	6.5	5.3	81.5	7.1	6.4	90.1
Travel costs	4.3	3.8	88.4	2.9	1.9	65.5	2.8	2.0	71.4
Other expenditures	4.6	3.6	78.3	1.9	3.2	168.4	5.3	5.7	107.5
Indirect costs	6.9	6.8	98.6	7.1	6.8	95.8	7.0	6.7	95.7

Source: NIH. OD. OPP. DAS. Report No. 11.

Appendix Table 28
Percent Distribution of Budgeted and Expended Funds and Percent Ratio by Cost Category
Grouped by Type of Sponsoring Institution
158 DGMS Training Grants, Fiscal Year 1959

Cost category	Medical school (88 training grants)			Public health school (21 training grants)			Non-medical graduate school (37 training grants)			Other institutions [1] (12 training grants)		
	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)	(1) Percent budgeted	(2) Percent expended	Percent ratio (2)x100 / (1)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Salaries of personnel	23.4	23.3	99.6	37.4	26.5	70.9	16.1	13.6	84.5	24.3	18.3	75.3
Trainee costs	48.8	45.8	93.9	45.0	54.4	120.9	51.1	48.6	95.1	33.5	39.0	116.4
Equipment (permanent)	7.6	12.2	160.5	1.6	5.3	331.3	10.4	15.1	145.2	4.6	11.0	239.1
Consumable supplies	7.7	6.1	79.2	2.0	1.8	90.0	8.3	8.5	102.4	5.6	8.3	148.2
Travel costs	3.1	2.1	67.7	3.8	3.3	86.8	2.6	1.5	57.7	4.8	3.7	77.1
Other expenditures	2.2	3.7	168.2	3.4	2.0	58.8	4.6	6.0	130.4	20.2	14.0	69.3
Indirect costs	7.2	6.8	94.4	6.8	6.7	98.5	6.9	6.7	97.1	7.0	5.7	81.4

[1] Includes 4 hospitals, 3 research institutes, 1 school of dentistry, 1 school of veterinary medicine, 1 undergraduate school, and 2 miscellaneous institutions.

Source: NIH. OD. OPP. DAS. Report No. 11.

Appendix Table 29

New Training Grant Projects 1/, Numbers Surviving, and Survival Rates by Year of NIH Award Support: Fiscal Years 1947-1962

Year of award support	Fiscal year of first (or original) award															
	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
	Number of training grant projects															
First year	2	144	53	159	46	52	46	73	79	153	263	238	453	406	600	829
Second year	2	143	52	154	46	40	45	73	78	150	261	235	441	394	589	
Third year	2	141	52	150	42	37	43	73	77	144	254	230	430	387		
Fourth year	2	139	52	146	41	36	43	71	77	136	246	213	412			
Fifth year	2	139	50	143	37	33	43	66	75	134	240	204				
Sixth year	2	138	49	138	36	30	42	65	74	127	229					
Seventh year	2	136	48	133	36	27	39	64	73	125						
Eighth year	2	135	48	133	35	26	39	64	72							
Ninth year	2	131	48	132	34	25	39	64								
Tenth year	2	131	46	131	33	25	39									
Eleventh year	2	130	46	130	33	25										
Twelfth year	2	129	45	130	32											
Thirteenth year	2	127	45	130												
Fourteenth year	2	127	45													
Fifteenth year	2	126														
Sixteenth year	2															
	Survival rate of NIH support of training grant projects															
First year	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Second year	100.0	99.3	98.1	96.9	100.0	76.9	97.8	100.0	98.7	98.0	99.2	98.7	97.4	97.0	98.2	
Third year	100.0	97.9	98.1	94.3	91.3	71.2	93.5	100.0	97.5	94.1	96.6	96.6	94.9	95.3		
Fourth year	100.0	96.5	98.1	91.8	89.1	69.2	93.5	97.3	97.5	88.9	93.5	89.5	90.9			
Fifth year	100.0	96.5	94.3	89.9	80.4	63.5	93.5	90.4	94.9	87.6	91.3	85.7				
Sixth year	100.0	95.8	92.5	86.8	78.3	57.7	91.3	89.0	93.7	83.0	87.1					
Seventh year	100.0	94.4	90.6	83.6	78.3	51.9	84.8	87.7	92.4	81.7						
Eighth year	100.0	93.8	90.6	83.6	76.1	50.0	84.8	87.7	91.1							
Ninth year	100.0	91.0	90.6	83.0	73.9	48.1	84.8	87.7								
Tenth year	100.0	91.0	86.8	82.4	71.7	48.1	84.8									
Eleventh year	100.0	90.3	86.8	81.8	71.7	48.1										
Twelfth year	100.0	89.6	84.9	81.8	69.6											
Thirteenth year	100.0	88.2	84.9	81.8												
Fourteenth year	100.0	88.2	84.9													
Fifteenth year	100.0	87.5														
Sixteenth year	100.0															

1/ Excludes grants not considered pertinent to the analysis of termination rates (e.g., chairman's grants, time-limited grants, etc.).

Source: NICHD Office of Program Analysis April 1964.

Appendix Table 30
A Comparison of Average Survival Rates and Average Annual Survival Rates
for 2,767 NIH Training Grants Originating Fiscal Years 1947-1961
and 19,325 NIH Research Grants Originating Fiscal Years 1951-1961

Number of years	Average survival rates: Percent of grants surviving specified number of years		Year of support	Average annual survival rates: Percent of grants in specified year surviving to subsequent year	
	Training grants	Research grants		Training grants	Research grants
1	100.0	100.0			
2	97.7	84.5	1st	97.7	84.5
3	95.2	67.1	2nd	97.5	81.5
4	91.7	48.6	3rd	96.4	75.3
5	89.1	40.0	4th	97.0	83.9
6	86.9	33.1	5th	96.7	80.9
7	84.6	26.5	6th	97.4	83.5
8	84.7	21.3	7th	99.3	86.1
9	82.6	16.7	8th	98.5	85.0
10	81.1	13.5	9th	99.0	89.6
11	80.3	10.1	10th	99.4	87.3

Sources: Training grants - NICHD. Office of Program Analysis. April 1963.
Research grants - OD. OPP. S & A, Report #16.

Appendix Table 31
Distribution of NIH Funds Awarded for Training Support, in Three Periods of 5 Years Each
1949-1953, 1954-1958, and 1959-1963,
by Institute
United States and Possessions

5-year period	All Institutes	Distribution of funds for training support by Institute: NIAID	NIAMD	NCI	NIDR	NIGMS 1/	NHI	NIMH	NINDB
				Funds (in thousands of dollars)					
Total	$111,140.7	$5,892.1	$7,570.6	$21,176.8	$3,377.0	$21,425.3	$21,973.6	$14,937.2	$14,788.1
1959-1963	77,377.6	5,057.7	5,052.9	9,446.0	2,464.7	18,456.1	13,049.6	12,206.2	11,644.4
1954-1958	22,900.1	568.3	2,201.4	7,331.3	697.0	887.3	6,615.5	1,722.1	2,877.2
1949-1953	10,863.0	266.1	316.3	4,399.5	215.3	2,081.9	2,308.5	1,008.9	266.5
				Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1959-1963	69.6	85.8	66.7	44.6	73.0	86.1	59.4	81.7	78.7
1954-1958	20.6	9.7	29.1	34.6	20.6	4.2	30.1	11.5	19.5
1949-1953	9.8	4.5	4.2	20.8	6.4	9.7	10.5	6.8	1.8

1/ Includes funds from NIH overall and DRG and NIGMS in earlier years.
Source: NIH. DRG. CDRB. Number and Amount of Awards in the Training Programs Supported by NIH, FY 1938-1963 (table)

Appendix Table 32
Occupational Grouping of Nonfederally Employed U.S. Members of National Advisory Councils and Study Sections
1959 and 1963

Occupational grouping	1963		1959	
	Number of persons	Percent of persons	Number of persons	Percent of persons
National advisory council and study section members				
Total	686	100.0	455	100.0
Academic	538	78.4	319	70.1
Hospital	51	7.4	46	10.1
Nonprofit research	63	9.2	41	9.0
Business	7	1.0	7	1.6
State or local government	8	1.2	10	2.2
No affiliation stated in roster	19	2.8	32	7.0
National advisory council members				
Total	117	100.0	108	100.0
Academic	76	64.9	59	54.6
Hospital	9	7.7	6	5.6
Nonprofit research	9	7.7	9	8.4
Business	5	4.3	5	4.6
State or local government	2	1.7	1	.9
No affiliation stated in roster	16	13.7	28	25.9
Study section members				
Total	569	100.0	347	100.0
Academic	462	81.2	260	74.9
Hospital	42	7.4	40	11.5
Nonprofit research	54	9.5	32	9.2
Business	2	.3	2	.6
State or local government	6	1.1	9	2.6
No affiliation stated in roster	3	.5	4	1.2

Source: Roster of panels of PHS public advisory groups for each year.

Appendix Table 33
Distribution of Place of Employment of U.S. Nonfederal Study Section Members, by Geographic Division
1953 and 1958-1963

Location	1963	1961	1959	1953
Total number	569	503	347	187
Total percent	100.0	100.0	100.0	100.0
Geographic division				
New England	10.6	11.1	9.3	13.9
Middle Atlantic	22.3	24.6	21.0	21.4
East North Central	17.0	18.5	22.4	19.8
West North Central	11.1	8.2	10.4	9.6
South Atlantic	12.5	11.9	12.1	11.8
East South Central	3.0	3.8	3.5	3.7
West South Central	5.1	4.6	5.5	5.4
Mountain	2.1	2.8	2.8	1.6
Pacific	16.3	14.5	13.0	12.8
NEW ENGLAND	10.6	11.1	9.3	13.9
Maine	.3	.6	.6	0
New Hampshire	.7	.4	.6	0
Vermont	.2	0	0	.5
Massachusetts	6.5	7.3	6.1	9.7
Rhode Island	.3	.6	.3	.5
Connecticut	2.6	2.2	1.7	3.2
MIDDLE ATLANTIC	22.3	24.6	21.0	21.4
New York	15.6	16.9	13.2	13.9
New Jersey	1.6	1.2	.9	.5
Pennsylvania	5.1	6.5	6.9	7.0
EAST NORTH CENTRAL	17.0	18.5	22.4	19.8
Ohio	4.6	3.8	4.0	4.3
Indiana	1.4	1.0	1.4	1.6
Illinois	4.9	7.1	8.1	8.6
Michigan	4.0	4.0	5.2	3.2
Wisconsin	2.1	2.6	3.7	2.1
WEST NORTH CENTRAL	11.1	8.2	10.4	9.6
Minnesota	3.7	3.8	5.8	3.2
Iowa	2.6	1.2	1.4	1.1
Missouri	3.0	2.0	2.0	4.3
North Dakota	0	0	0	0
South Dakota	0	0	0	0
Nebraska	.2	.4	.6	.5
Kansas	1.6	.8	.6	.5
SOUTH ATLANTIC	12.5	11.9	12.1	11.8
Delaware	0	0	0	0
Maryland	4.0	3.3	4.9	4.3
District of Columbia	.7	.4	1.2	1.1
Virginia	1.1	1.6	.6	1.6
West Virginia	0	.2	0	0
North Carolina	3.2	3.2	3.7	1.6
South Carolina	0	0	0	0
Georgia	.9	.2	.3	3.2
Florida	2.6	3.0	1.4	0
EAST SOUTH CENTRAL	3.0	3.8	3.5	3.7
Kentucky	.7	.6	.3	.5
Tennessee	1.8	2.6	2.9	2.1
Alabama	.3	.4	0	1.1
Mississippi	.2	.2	.3	0
WEST SOUTH CENTRAL	5.1	4.6	5.5	5.4
Arkansas	.2	0	.6	0
Louisiana	1.2	1.2	1.7	2.7
Oklahoma	.3	.6	0	1.1
Texas	3.4	2.8	3.2	1.6
MOUNTAIN	2.1	2.8	2.8	1.6
Montana	0	0	0	0
Idaho	0	0	0	0
Wyoming	0	0	0	0
Colorado	1.1	1.2	1.4	.5
New Mexico	.3	.2	0	0
Arizona	.2	.2	0	0
Utah	.5	1.2	1.4	1.1
Nevada	0	0	0	0
PACIFIC	16.3	14.5	13.0	12.8
Washington	2.6	2.2	2.3	2.1
Oregon	2.6	2.0	1.2	1.6
California	10.9	10.1	9.5	9.1
Alaska	0	0	0	0
Hawaii	.2	.2	0	0

Source: Roster of Members of PHS Advisory Groups for each year.

Appendix Table 34
Distribution of Place of Employment of U.S. Nonfederal National Advisory Council Members, by Geographic Division
1953 and 1958-1963

Location	1963	1961	1959	1953
Total number	117	106	108	80
Total percent	100.0	100.0	100.0	100.0
Geographic division				
New England	12.0	13.1	13.8	11.2
Middle Atlantic	18.7	19.9	15.6	28.8
East North Central	10.3	13.3	12.1	15.0
West North Central	13.7	13.2	9.3	7.5
South Atlantic	15.3	13.2	18.5	9.8
East South Central	2.6	.9	1.9	6.1
West South Central	6.0	7.6	3.7	2.5
Mountain	6.0	6.5	6.6	4.9
Pacific	15.4	12.3	18.5	13.7
NEW ENGLAND	12.0	13.1	13.8	11.2
Maine	0	0	.9	1.2
New Hampshire	.9	2.8	2.8	0
Vermont	0	0	0	0
Massachusetts	8.5	8.5	6.4	7.5
Rhode Island	.9	.9	.9	0
Connecticut	1.7	.9	2.8	2.5
MIDDLE ATLANTIC	18.7	19.9	15.6	28.8
New York	14.5	14.2	9.2	23.8
New Jersey	0	.9	.9	0
Pennsylvania	4.2	4.8	5.5	5.0
EAST NORTH CENTRAL	10.3	13.3	12.1	15.0
Ohio	.9	1.9	1.9	5.0
Indiana	1.7	1.9	.9	0
Illinois	3.4	3.8	3.7	6.3
Michigan	3.4	.9	2.8	2.5
Wisconsin	.9	4.8	2.8	1.2
WEST NORTH CENTRAL	13.7	13.2	9.3	7.5
Minnesota	6.8	4.8	3.7	6.3
Iowa	.9	2.8	1.9	0
Missouri	3.4	3.8	2.8	0
North Dakota	0	0	0	0
South Dakota	0	0	0	0
Nebraska	1.7	.9	0	1.2
Kansas	.9	.9	.9	0
SOUTH ATLANTIC	15.3	13.2	18.5	9.8
Delaware	0	0	0	0
Maryland	4.2	4.8	4.6	1.2
District of Columbia	4.2	2.8	5.5	2.5
Virginia	.9	.9	1.9	1.2
West Virginia	0	0	0	0
North Carolina	5.1	3.8	2.8	1.2
South Carolina	0	0	.9	0
Georgia	.9	0	.9	2.5
Florida	0	.9	1.9	1.2
EAST SOUTH CENTRAL	2.6	.9	1.9	6.1
Kentucky	0	0	0	1.2
Tennessee	1.7	0	0	2.5
Alabama	.9	.9	1.9	1.2
Mississippi	0	0	0	1.2
WEST SOUTH CENTRAL	6.0	7.6	3.7	2.5
Arkansas	0	0	0	0
Louisiana	1.7	1.9	.9	0
Oklahoma	.9	.9	0	2.5
Texas	3.4	4.8	2.8	0
MOUNTAIN	6.0	6.5	6.6	4.9
Montana	0	.9	0	0
Idaho	0	0	0	0
Wyoming	0	0	0	0
Colorado	1.7	2.8	2.8	2.5
New Mexico	.9	.9	0	0
Arizona	.9	0	1.9	1.2
Utah	2.5	1.9	1.9	1.2
Nevada	0	0	0	0
PACIFIC	15.4	12.3	18.5	13.7
Washington	4.2	1.9	4.6	1.2
Oregon	0	0	1.9	1.2
California	9.4	9.5	12.0	11.3
Alaska	.9	0	0	0
Hawaii	.9	.9	0	0

Source: Roster of Members of PHS Public Advisory Groups for each year.
Note: Due to rounding, percents do not neceasarily add to 100.0.

Appendix Table 35

Distribution of Selected Higher Degrees Conferred at U.S. Institutions of Higher Education, 1961-1962, and of NIH Extramural Awards under Four Programs 1/ and of NIH Research Grant Awards, Fiscal Year 1962 by Geographic Division

Location	Selected degrees conferred 1961-62 2/ U.S. institutions of higher education			Four extramural programs fiscal year 1962 3/		NIH research grant awards fiscal year 1962	
	M.D. and Ph.D.	M.D.	Ph.D.	Grants	Dollars	Grants	Dollars
Total dollars	18,758	7,138	11,620	17,337	$423,337,580	10,861	$272,748,637
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Geographic division							
New England	8.4	5.7	10.1	11.0	10.8	9.9	11.3
Middle Atlantic	22.0	22.9	21.5	20.6	22.2	21.3	21.7
East North Central	23.3	19.6	25.6	17.4	16.9	17.8	17.5
West North Central	9.2	10.0	8.7	9.3	8.3	9.3	7.6
South Atlantic	11.6	15.3	9.4	14.5	12.9	14.6	13.0
East South Central	4.0	6.9	2.2	4.2	3.8	4.4	3.5
West South Central	7.2	9.6	5.6	6.2	7.2	6.3	7.0
Mountain	3.0	1.7	3.7	3.2	2.6	3.1	2.3
Pacific	11.3	8.3	13.2	13.6	15.3	13.3	16.1
NEW ENGLAND	8.4	5.7	10.1	11.0	10.8	9.9	11.3
Maine	0.0	0	0.0	0.0	0.0	.1	0.0
New Hampshire	0.0	0	.1	.1	0.0	.1	0.0
Vermont	.2	.5	0.0	.5	.4	.6	.4
Massachusetts	5.9	4.1	7.0	7.4	7.7	6.4	8.3
Rhode Island	.4	0	.6	.5	.5	.5	.4
Connecticut	1.9	1.1	2.4	2.5	2.2	2.2	2.2
MIDDLE ATLANTIC	22.0	22.9	21.5	20.6	22.2	21.3	21.7
New York	13.5	13.3	13.6	13.2	15.1	13.4	14.2
New Jersey	1.9	1.0	2.4	1.4	1.3	1.5	1.4
Pennsylvania	6.6	8.6	5.5	6.0	5.8	6.4	6.1
EAST NORTH CENTRAL	23.3	19.6	25.6	17.4	16.9	17.8	17.5
Ohio	3.9	4.2	3.7	3.2	3.2	3.3	3.3
Indiana	3.7	1.9	4.8	1.9	1.5	1.9	1.7
Illinois	7.5	7.1	7.8	6.2	5.9	6.4	5.8
Michigan	4.9	3.9	5.5	3.4	3.6	3.5	3.7
Wisconsin	3.3	2.5	3.8	2.7	2.7	2.7	3.0
WEST NORTH CENTRAL	9.2	10.0	8.7	9.3	8.3	9.3	7.6
Minnesota	2.1	1.7	2.4	2.6	2.6	2.6	2.5
Iowa	2.4	1.6	2.9	1.5	1.2	1.5	1.1
Missouri	2.4	3.5	1.7	3.0	2.8	3.0	2.6
North Dakota	.1	0	.1	.2	.2	.1	.1
South Dakota	0.0	0	0.0	.1	.1	.1	.1
Nebraska	1.1	1.9	.6	.7	.6	.7	.4
Kansas	1.1	1.3	1.0	1.2	.8	1.3	.8
SOUTH ATLANTIC	11.6	15.3	9.4	14.5	12.9	14.6	13.0
Delaware	.1	0	.2	.1	0.0	.1	0.0
Maryland	2.1	2.4	2.0	3.7	4.1	3.5	4.1
District of Columbia	2.5	3.7	1.7	1.7	1.2	1.6	1.0
Virginia	1.3	2.0	.8	1.4	1.2	1.5	1.3
West Virginia	.1	.2	.1	.3	.2	.4	.3
North Carolina	2.3	2.6	2.1	3.6	3.0	3.5	2.9
South Carolina	.4	1.0	.1	.3	.3	.4	.3
Georgia	1.1	2.0	.5	1.5	1.3	1.6	1.4
Florida	1.7	1.4	1.9	1.9	1.6	2.0	1.7
EAST SOUTH CENTRAL	4.0	6.9	2.2	4.2	3.8	4.4	3.5
Kentucky	.7	1.2	.5	1.0	.8	1.2	.8
Tennessee	2.3	3.9	1.2	1.9	2.0	1.8	1.7
Alabama	.6	.9	.4	.8	.6	.8	.6
Mississippi	.4	.9	.1	.5	.4	.6	.4
WEST SOUTH CENTRAL	7.2	9.6	5.6	6.2	7.2	6.3	7.0
Arkansas	.6	1.0	.3	.5	.4	.6	.4
Louisiana	1.9	3.2	1.1	1.6	2.8	1.5	2.7
Oklahoma	1.1	1.2	1.1	1.1	.9	1.0	.9
Texas	3.6	4.2	3.1	3.0	3.1	3.2	3.0
MOUNTAIN	3.0	1.7	3.7	3.2	2.6	3.1	2.3
Montana	.1	0	.1	.2	.1	.2	.1
Idaho	0.0	0	0.0	0.0	0.0	0.0	0.0
Wyoming	.1	0	.2	.1	0.0	.1	0.0
Colorado	1.7	1.1	2.0	1.5	1.2	1.3	1.1
New Mexico	.2	0	.2	0.0	0.0	.1	0.0
Arizona	.2	0	.4	.3	.2	.4	.2
Utah	.7	.6	.8	1.1	1.1	1.0	.9
Nevada	0	0	0	0	0	0	0
PACIFIC	11.3	8.3	13.2	13.6	15.3	13.3	16.1
Washington	1.4	1.0	1.6	2.4	2.4	2.3	2.4
Oregon	1.1	1.0	1.2	1.3	1.2	1.3	1.2
California	8.8	6.3	10.4	9.8	11.6	9.5	12.3
Alaska	0.0	0	0.0	0	0	0	0
Hawaii	0.0	0	0.0	.1	.1	.2	.2

1/ Excludes health services formula grants and contracts.

2/ DHEW, Office of Education. Earned Degrees Conferred. OE 54013-62, pp. 16-36, 144-145.

3/

Appendix Table 36

Approval Rate and Median Priority Score by Type of Research Grant, for Five Groupings of Amount Requested per Application
Applications from U.S. and Possessions
January - February 1961 Study Section Meetings

Type of grant	All applications, by study section recommendation					Median priority score	Distribution of priority scores (approved applications) January-February 1961 study sections			
	Total number	Number not approved		Approved						
		Deferred	Dis-approved	Number	Rate of approval		100-199	200-249	250-299	300 and over
					ALL APPLICATIONS					
Competing continuation	565	23	85	457	80.9	253	24%	24%	21%	30%
Supplement	291	16	44	231	79.4	220	38	27	20	16
New	1,895	124	792	979	51.7	260	19	25	27	29
					LESS THAN $10,000 REQUESTED					
Competing continuation	76	0	15	61	80.3	262	16%	26%	26%	31%
Supplement	155	5	21	129	83.2	214	37	30	18	15
New	382	18	156	208	54.4	270	12	26	27	35
					$10,000 - $19,999 REQUESTED					
Competing continuation	211	5	38	168	79.6	264	18%	23%	24%	35%
Supplement	70	5	12	53	75.7	231	36	26	23	15
New	714	31	287	396	55.5	262	20	23	28	29
					$20,000 - $29,999 REQUESTED					
Competing continutation	137	5	21	111	81.0	254	23%	23%	22%	32%
Supplement	29	0	7	22	75.9	228	27	32	27	14
New	380	32	143	205	53.9	258	15	27	29	29
					$30,000 - $39,999 REQUESTED					
Competing continuation	58	3	3	52	89.7	236	31%	25%	15%	29%
Supplement	14	3	2	9	64.3	254	44	0	22	33
New	168	22	74	72	42.9	258	22	25	21	32
					$40,000 OR MORE REQUESTED					
Competing continuation	83	10	8	65	78.3	210	42%	28%	15%	15%
Supplement	23	3	2	18	78.3	162	61	11	11	17
New	251	21	132	98	39.0	223	36	29	24	12

Source: Research grant applications and study section records.

Appendix Table 37

Number of NIH Research Grant Applications Recommended for Approval, by Priority Score and Amount Requested Grouping, Showing Mean Value for Each Group Interval. Institutions of Higher Education "With" and "Without" a Medical School. United States and Possessions. Fiscal Year 1960 Listings

Amount requested per approved application	All approved applications	Number of applications by priority score group								Mean priority score
		100-149	150-199	200-249	250-299	300-349	350-399	400-449	450-499	
249 INSTITUTIONS OF HIGHER EDUCATION										
Total	3,926 1/	310	641	1,001	876	721	281	84	12	(254.2)
Under $20,000	2,984	199	467	766	667	565	234	74	12	258.3
$ 20,000 - 49,999	824	78	154	204	190	145	43	10	0	245.6
50,000 - 99,999	101	25	18	26	17	11	4	0	0	216.6
100,000 or more	17	8	2	5	2	0	0	0	0	177.9
Mean amount requested	$16,567	$24,052	$17,055	$16,807	$15,997	$14,972	$14,146	$11,548	$8,333	
82 INSTITUTIONS OF HIGHER EDUCATION "WITH" A MEDICAL SCHOOL										
Total	3,288 2/	255	548	830	738	607	232	68	10	(254.1)
Under $20,000	2,462	163	391	625	553	467	192	61	10	258.3
$ 20,000 - 49,999	724	66	138	177	167	131	38	7	0	245.8
50,000 - 99,999	85	18	17	23	16	9	2	0	0	217.4
100,000 or more	17	8	2	5	2	0	0	0	0	177.9
Mean amount requested	$17,014	$24,435	$17,677	$17,384	$16,562	$15,297	$13,922	$11,471	$9,000	
167 INSTITUTIONS OF HIGHER EDUCATION "WITHOUT" A MEDICAL SCHOOL										
Total	638 3/	55	93	171	138	114	49	16	2	(255.1)
Under $20,000	522	36	76	141	114	98	42	13	2	258.5
$ 20,000 - 49,999	100	12	16	27	23	14	5	3	0	244.0
50,000 - 99,999	16	7	1	3	1	2	2	0	0	212.5
100,000 or more	0	0	0	0	0	0	0	0	0	0
Mean amount requested	$14,264	$22,273	$13,387	$14,006	$12,971	$13,246	$15,204	$11,875	$5,000	

Source: Research grant applications and study section records.

1/ Count excludes 3 applications in the amount of under $20,000, no priority score recorded.
2/ Count excludes 2 applications in the amount of under $20,000, no priority score recorded.
3/ Count excludes 1 application in the amount of under $20,000, no priority score recorded.

Appendix Table 38

Approval Rate and Median Priority Score of Sponsoring Institutions by Type, for Five Groupings of Amount Requested per Research Grant Application.
New Grants from U.S. and Possessions
Jsnusry - February 1961 Study Section Meetings

Type of sponsoring institution	All applications, by study section recommendation					Median priority score	Distribution of priority scores (approved applications) January-February 1961 study sections			
	Total number	Number not approved: Deferred	Number not approved: Dis-approved	Approved: Number	Approved: Rate of approval		100-199	200-249	250-299	300 and over
ALL APPLICATIONS										
Education, "with" a medical school[1]	1,161	69	432	660	56.8	255	20%	26%	27%	27%
Education, "without" a medical school[2]	289	16	138	135	46.7	262	14	23	36	27
Hospital	229	21	119	89	38.9	305	9	17	22	52
Government	51	5	24	22	43.1	249	36	14	27	23
Research institute and other	165	13	79	73	44.2	238	23	33	20	23
LESS THAN $10,000 REQUESTED										
Education, "with" a medical school[1]	206	8	73	125	60.7	270	10%	30%	22%	38%
Education, "without" a medical school[2]	91	4	41	46	50.5	268	13	15	41	30
Hospital	47	3	21	23	48.9	300	9	17	22	52
Government	6	2	2	2	33.3	222	50	0	50	0
Research institute and other	32	1	19	12	37.5	222	25	42	33	0
$10,000 - $19,999 REQUESTED										
Education, "with" a medical school[1]	461	17	169	275	59.7	262	21%	23%	29%	27%
Education, "without" a medical school[2]	117	5	53	59	50.4	255	19	25	29	27
Hospital	73	5	38	30	41.1	284	13	23	17	47
Government	18	2	7	9	50.0	260	22	22	33	22
Research institute and other	45	2	20	23	51.1	267	17	22	26	35
$20,000 - $29,999 REQUESTED										
Education, "with" a medical school[1]	245	17	93	135	55.1	254	14%	29%	33%	24%
Education, "without" a medical school[2]	47	4	23	20	42.6	264	0	35	40	25
Hospital	47	5	20	22	46.8	309	4	9	23	64
Government	4	1	0	3	75.0	173	67	0	33	0
Research institute and other	37	5	7	25	67.6	231	32	32	8	28
$30,000 - $39,999 REQUESTED										
Education, "with" a medical school[1]	104	14	38	52	50.0	246	25%	27%	19%	29%
Education, "without" a medical school[2]	13	1	8	4	30.8	202	25	25	50	0
Hospital	26	5	13	8	30.8	339	12	12	12	63
Government	7	0	5	2	28.6	332	0	0	0	100
Research institute and other	18	2	10	6	33.3	262	17	33	33	17
$40,000 OR MORE REQUESTED										
Education, "with" a medical school[1]	145	13	59	73	50.3	210	41%	29%	19%	11%
Education, "without" a medical school[2]	21	2	13	6	28.6	260	17	17	50	17
Hospital	36	3	27	6	16.7	268	0	17	67	17
Government	16	0	10	6	37.5	198	50	17	17	17
Research institute and other	33	3	23	7	21.2	222	14	57	14	14

[1] Institution of Higher Education which includes a medical school or medical school and hospital within its complex.

[2] Institution of Higher Education which does not include a medical school within its complex.

Source: Research grant applications and study section records.

Appendix Table 39

Approval Rate and Median Priority Score, by Enrollment at Institution of Higher Education, for Five Groupings of Amount Requested per Application

New Grants Sponsored by Institutions of Higher Education, U.S. and Possessions

Research

January - February 1961 Study Section Meetings

Enrollment at institution of higher education	All applications, by study section recommendation					Median priority score	Distribution of priority scores (approved applications) January-February 1961 study sections			
	Total number	Number not approved		Approved						
		Deferred	Dis-approved	Number	Rate of approval		100-199	200-249	250-299	300 and over
					ALL APPLICATIONS					
Enrollment of 10,000 or more	800	47	305	448	56.0	250	20%	29%	27%	24%
5,000 - 9,999	391	24	151	216	55.2	256	21	22	30	27
4,999 or less	259	14	114	131	50.6	270	11	21	31	37
					LESS THAN $10,000 REQUESTED					
Enrollment of 10,000 or more	129	6	44	79	61.2	256	13%	34%	25%	28%
5,000 - 9,999	102	4	40	58	56.9	270	12	19	33	36
4,999 or less	66	2	30	34	51.5	302	6	18	23	53
					$10,000 - $19,999 REQUESTED					
Enrollment of 10,000 or more	308	10	114	184	59.7	264	20%	24%	31%	25%
5,000 - 9,999	166	7	67	92	55.4	252	25	24	27	24
4,999 or less	104	5	41	58	55.8	270	17	21	26	36
					$20,000 - $29,999 REQUESTED					
Enrollment of 10,000 or more	185	11	72	102	55.1	254	16%	31%	30%	23%
5,000 - 9,999	58	6	19	33	56.9	275	9	18	40	33
4,999 or less	49	4	25	20	40.8	260	0	40	40	20
					$30,000 - $39,999 REQUESTED					
Enrollment of 10,000 or more	72	8	33	31	43.1	246	19%	32%	23%	26%
5,000 - 9,999	32	5	8	19	59.4	200	42	26	16	16
4,999 or less	13	2	5	6	46.2	314	0	0	33	67
					$40,000 OR MORE REQUESTED					
Enrollment of 10,000 or more	106	12	42	52	49.1	204	44%	32%	12%	12%
5,000 - 9,999	33	2	17	14	42.4	234	36	21	29	14
4,999 or less	27	1	13	13	48.1	264	23	15	54	8

Source: Research grant applications and study section records.

Appendix Table 40

Approval Rate and Median Priority Score, by Age of Principal Investigator, for Five Groupings of Amount Requested per Application
New Grants from U.S. and Possessions
January - February 1961 Study Section Meetings

Age of principal investigator	All applications, by study section recommendation					Median priority score	Distribution of priority scores (approved applications) January-February 1961 study sections			
	Total number	Number not approved		Approved			100-199	200-249	250-299	300 and over
		Deferred	Dis-approved	Number	Rate of approval					
ALL APPLICATIONS										
Less than 30 years	104	3	33	68	65.4	260	13%	31%	28%	28%
30 - 39	915	68	340	507	55.4	256	20	25	28	27
40 - 49	562	38	257	267	47.5	264	20	20	28	32
50 - 59	236	9	121	106	44.9	242	18	35	21	26
60 or more	70	6	36	28	40.0	274	15	21	21	43
Not stated	8	0	5	3	37.5	238	0	67	33	0
LESS THAN $10,000 REQUESTED										
Less than 30 years	31	1	12	18	58.1	255	11%	28%	33%	28%
30 - 39	201	10	83	108	53.7	270	10	26	32	32
40 - 49	91	3	39	49	53.8	277	14	18	27	41
50 - 59	42	2	16	24	57.1	271	17	29	12	42
60 or more	15	2	5	8	53.3	282	12	25	12	50
Not stated	2	0	1	1	50.0	200	0	100	0	0
$10,000 - $19,999 REQUESTED										
Less than 30 years	48	2	15	31	64.6	266	16%	23%	29%	32%
30 - 39	353	21	115	217	61.5	255	21	26	26	27
40 - 49	198	5	94	99	50.0	270	17	15	34	33
50 - 59	87	2	46	39	44.8	250	23	31	18	28
60 or more	23	1	14	8	34.8	262	12	12	50	25
Not stated	5	0	3	2	40.0	256	0	50	50	0
$20,000 - $29,999 REQUESTED										
Less than 30 years	18	0	3	15	83.3	238	6%	47%	20%	27%
30 - 39	197	15	67	115	58.4	260	16	23	33	28
40 - 49	107	13	42	52	48.6	252	17	27	25	31
50 - 59	47	3	26	18	38.3	245	11	39	28	22
60 or more	11	1	5	5	45.5	311	0	20	20	60
Not stated	0	0	0	0	0	0	0	0	0	0
$30,000 - $39,999 REQUESTED										
Less than 30 years	3	0	1	2	66.7	186	50%	50%	0%	0%
30 - 39	75	11	31	33	44.0	246	27	24	31	18
40 - 49	63	9	26	28	44.4	290	18	21	18	43
50 - 59	18	1	12	5	27.8	244	0	60	0	40
60 or more	9	1	4	4	44.4	361	25	0	0	75
Not stated	0	0	0	0	0	0	0	0	0	0
$40,000 OR MORE REQUESTS										
Less than 30 years	4	0	2	2	50.0	246	0%	50%	50%	0%
30 - 39	89	11	44	34	38.2	205	41	26	18	15
40 - 49	103	8	56	39	37.9	231	41	21	23	15
50 - 59	42	1	21	20	47.6	234	20	40	35	5
60 or more	12	1	8	3	25.0	200	33	67	0	0
Not stated	1	0	1	0	0	0	0	0	0	0

Source: Research grant applications and study section records.

Appendix Table 41
Approval Rate and Median Priority Score, by Highest Degree(a) of Principal Investigator, for Five Groupings of Amount Requested per Research Grant Application.
New Grants from U.S. and Possessions
January - February 1961 Study Section Meetings

Highest degree(s) earned by principal investigator	All applications, by study section recommendation					Median priority score	Distribution of priority scores (approved applications) January-February 1961 study sections			
	Total number	Number not approved		Approved						
		Deferred	Dis-approved	Number	Rate of approval		100-199	200-249	250-299	300 and over
ALL APPLICATIONS										
Ph.D.	899	55	328	516	57.4	255	22%	24%	27%	26%
D.Sc., D.Engr. and D.V.M.	50	5	19	26	52.0	254	12	31	35	23
M.D. with or without another degree[1]	816	52	373	391	47.9	260	16	26	26	32
D.D.S. with or without an M.D. degree	50	6	27	17	34.0	288	6	12	41	41
All other degrees	80	6	45[2]	29[3]	36.2	264	7	31	38	24
LESS THAN $10,000 REQUESTED										
Ph.D.	195	7	73	115	59.0	269	13%	22%	35%	30%
D.Sc., D.Engr. and D.V.M.	6	0	3	3	50.0	300	0	33	0	67
M.D. with or without another degree[1]	149	7	62	80	53.7	267	11	31	18	40
D.D.S. with or without an M.D. degree	12	3	6	3	25.0	307	0	33	0	67
All other degrees	20	1	12	7	35.0	264	14	14	43	29
$10,000 - $19,999 REQUESTED										
Ph.D.	364	18	126	220	60.4	260	22%	24%	26%	29%
D.Sc., D.Engr. and D.V.M.	15	1	5	9	60.0	250	22	22	33	22
M.D. with or without another degree[1]	295	12	131	152	51.5	266	18	22	30	30
D.D.S. with or without an M.D. degree	18	0	12	6	33.3	286	0	17	67	17
All other degrecs	22	0	13	9	40.9	250	11	33	33	22
$20,000 - $29,999 REQUESTED										
Ph.D.	182	12	65	105	57.7	255	19%	26%	31%	24%
D.Sc., D.Engr. and D.V.M.	10	0	3	7	70.0	260	0	29	57	14
M.D. with or without another degree[1]	169	16	70	83	49.1	260	11	29	25	35
D.D.S. with or without an M.D. degree	9	2	3	4	44.4	312	25	0	0	75
All other degrees	10	2	2	6	60.0	249	0	50	33	17
$30,000 - $39,999 REQUESTED										
Ph.D.	61	7	23	31	50.8	242	29%	29%	13%	29%
D.Sc., D.Engr. and D.V.M.	8	1	4	3	37.5	211	0	67	33	0
M.D. with or without another degree[1]	85	12	41	32	37.6	273	22	16	28	34
D.D.S. with or without an M.D. degree	4	0	2	2	50.0	292	0	0	50	50
All other degrees	10	2	4	4	40.0	292	0	50	0	50
$40,000 OR MORE REQUESTED										
Ph.D.	97	11	41	45	46.4	194	53%	24%	13%	9%
D.Sc., D.Engr. and D.V.M.	11	3	4	4	36.4	243	25	25	25	25
M.D. with or without another degree[1]	118	5	69	44	37.3	232	23	34	27	16
D.D.S. with or without an M.D. degree	7	1	4	2	28.6	286	0	0	100	0
All other degrees	18	1	14	3	16.7	264	0	0	100	0

1/ M.D. with or without another degree other than D.D.S.
2/ Three principal investigators have no college degree and one did not record his degree.
3/ One principal investigator did not record his degree.

Source: Research grant applications and study section records.

Appendix Table 42

Approval Rate and Median Priority Score by Type of Research Grant, for Five Groupings of Amount Requested per Application Within United States and Possessions

January-February 1964 Initial Review Group Meetings[1] for March 1964 National Advisory Council Meetings

Type of grant	All applications, by Review Group recommendation					Median priority score	Distribution of priority scores (approved applications) January-February 1964 Review Group Meetings			
	Total number	Number not approved		Approved						
		Deferred	Dis-approved	Number	Rate of approval		100-199	200-249	250-299	300 and over
					ALL APPLICATIONS					
Competing continuation	816	46	173	597	73.2	262	20%	23%	25%	32%
Supplement	304	8	48	248	81.6	233	33	32	20	15
New	2,226	117	976	1,133	50.9	266	20	22	24	34
					LESS THAN $10,000 REQUESTED					
Competing continuation	101	0	28	73	72.3	266	17%	23%	27%	33%
Supplement	131	1	15	115	87.8	228	36	32	18	14
New	312	7	128	177	56.7	280	15	21	23	41
					$10,000 - $19,999 REQUESTED					
Competing continuation	268	11	63	194	72.4	267	18%	31%	17%	34%
Supplement	82	3	16	63	76.8	235	30	25	32	13
New	686	27	288	371	54.1	277	17	20	23	40
					$20,000 - $29,999 REQUESTED					
Competing continuation	186	13	39	134	72.0	267	18%	31%	17%	34%
Supplement	39	1	6	32	82.0	253	19	37	22	22
New	425	32	175	218	51.3	254	23	24	25	28
					$30,000 - $39,999 REQUESTED					
Competing continuation	112	10	17	85	75.9	262	23%	19%	23%	35%
Supplement	15	1	4	10	66.7	200	50	30	10	10
New	240	19	105	116	48.3	268	17	21	28	34
					$40,000 OR MORE REQUESTED					
Competing continuation	149	12	26	111	74.5	237	35%	19%	23%	23%
Supplement	37	2	7	28	75.7	227	39	36	4	21
New	563	32	280	251	44.6	252	24	26	24	26

1/ Includes all applications reviewed by study sections, committees, and program project committees with the exception of Mental Health Small Grants.

Source: DRG. SAB. DP. Computer printout.

Appendix Table 43

Study Section Recommendation by Amount Requested per Research Grant. Continuation, Supplement and Original Applications Within the United States and Possessions. January-February 1961 Study Section Meetings

Amount requested per application	Number of applications					Percent of applications *				
	All recommendations	No priority score		Priority score		All recommendations	No priority score		Priority score	
		Deferred	Disapproved	Low 10%	All other		Deferred; pending	Disapproved	Low 10%	All other
ALL APPLICATIONS										
Total	2,751	163	921	150	1,517	100%	100%	100%	100%	100%
Less than $10,000	613	23	192	39	359	22	14	21	26	24
$10,000 - $19,999	995	41	337	63	554	36	25	37	42	36
$20,000 - $29,999	546	37	171	32	306	20	23	18	21	20
$30,000 - $39,999	240	28	79	11	122	9	17	9	7	8
$40,000 or over	357	34	142	5	176	13	21	15	4	12
COMPETING CONTINUATION APPLICATIONS										
Total	565	23	85	42	415	100%	100%	100%	100%	100%
Less than $10,000	76	0	15	10	51	13	0	18	24	12
$10,000 - $19,999	211	5	38	17	151	37	22	45	40	36
$20,000 - $29,999	137	5	21	7	104	24	22	25	17	25
$30,000 - $39,999	58	3	3	6	46	10	13	4	14	11
$40,000 or over	83	10	8	2	63	15	43	9	5	15
SUPPLEMENT APPLICATIONS										
Total	291	16	44	7	224	100%	100%	100%	100%	100%
Less than $10,000	155	5	21	4	125	53	31	48	57	56
$10,000 - $19,999	70	5	12	1	52	24	31	27	14	23
$20,000 - $29,999	29	0	7	0	22	10	0	16	0	10
$30,000 - $39,999	14	3	2	2	7	5	19	5	29	3
$40,000 or over	23	3	2	0	18	8	19	5	0	8
ORIGINAL APPLICATIONS										
Total	1,895	124	792	101	878	100%	100%	100%	100%	100%
Less than $10,000	382	18	156	25	183	20	15	20	25	21
$10,000 - $19,999	714	31	287	45	351	38	25	36	45	40
$20,000 - $29,999	380	32	143	25	180	20	26	18	25	20
$30,000 - $39,999	168	22	74	3	69	9	18	9	3	8
$40,000 or over	251	21	132	3	95	13	17	17	3	11

* Percentages may not add to 100.0 percent due to rounding.

Source: Research grant applications and study section records.

Appendix Table 44

Initial Review Group Recommendation by Amount Requested per Research Grant. Continuation, Supplement and Original Applications Within United States and Possessions

January-February 1964 Initial Review Group Meetings[1] For March 1964 National Advisory Council Meetings

Amount requested per application	Number of applications					Percent of applications*				
	All recommendations	No priority score		Priority score		All recommendations	No priority score		Priority score	
		Deferred	Disapproved	Low 10%	All other		Deferred	Disapproved	Low 10%	All other
ALL APPLICATIONS										
Total	3,346	171	1,197	179	1,799	100%	100%	100%	100%	100%
Less than $10,000	544	8	171	36	329	16	5	14	20	18
$10,000 - 19,999	1,036	41	367	72	556	31	24	31	40	31
$20,000 - 29,999	650	46	220	28	356	20	27	18	16	20
$30,000 - 39,999	367	30	126	22	189	11	17	11	12	10
$40,000 or over	749	46	313	21	369	22	27	26	12	21
COMPETING CONTINUATION APPLICATIONS										
Total	816	46	173	62	535	100%	100%	100%	100%	100%
Less than $10,000	101	0	28	13	60	12	0	16	21	11
$10,000 - 19,999	268	11	63	24	170	33	24	36	39	32
$20,000 - 29,999	186	13	39	13	121	23	28	23	21	23
$30,000 - 39,999	112	10	17	9	76	14	22	10	14	14
$40,000 or over	149	12	26	3	108	18	26	15	5[2]	20
SUPPLEMENT APPLICATIONS										
Total	304	8	48	6	242	100%	100%	100%	100%	100%
Less than $10,000	131	1	15	3	112	43	12[3]	31	50	47
$10,000 - 19,999	82	3	16	2	61	27	38	33	33	25
$20,000 - 29,999	39	1	6	0	32	13	12[3]	13	0	13
$30,000 - 39,999	15	1	4	0	10	5	12[3]	8	0	4
$40,000 or over	37	2	7	1	27	12	25	15	17[3]	11
ORIGINAL APPLICATIONS										
Total	2,226	117	976	111	1,022	100%	100%	100%	100%	100%
Less than $10,000	312	7	128	20	157	14	6	13	18	15
$10,000 - 19,999	686	27	288	46	325	31	23	29	41	32
$20,000 - 29,999	425	32	175	15	203	19	27	18	14	20
$30,000 - 39,999	240	19	105	13	103	11	17	11	12	10
$40,000 or over	563	32	280	17	234	25	27	29	15	23

1/ Includes all applications reveiwed by study sections, committees, and program project committees, with the exception of mental health small grants.

2/ Only 3 applications in group.

3/ Only 1 application in group.

Source: DRG. SAB. DP. Computer printout.

Appendix Table 45

Distribution of Total NIH Extramural Program Funds Awarded, by Geographic Division. United States. Fiscal Years 1961 - 1964

Location	1964	1963	1962	1961
Total dollars	$797,002,170	$690,934,607	$571,622,989	$460,453,867
Total percent	100.0	100.0	100.0	100.0
Geographic division				
New England	12.7	13.7	13.2	13.3
Middle Atlantic	23.9	23.9	24.7	24.6
East North Central	15.7	16.1	15.6	15.8
West North Central	7.2	7.3	7.3	7.5
South Atlantic	13.1	12.9	12.5	13.3
East South Central	3.7	3.7	3.5	3.8
West South Central	6.1	5.9	6.0	5.2
Mountain	2.7	2.5	2.3	2.7
Pacific	14.9	14.0	14.9	13.8
NEW ENGLAND	12.7	13.7	13.2	13.3
Maine	.2	.3	.3	.3
New Hampshire	.3	.3	.3	.3
Vermont	.3	.4	.3	.5
Massachusetts	9.2	10.1	9.9	9.8
Rhode Island	.5	.4	.5	.5
Connecticut	2.2	2.2	1.9	1.9
MIDDLE ATLANTIC	23.9	23.9	24.7	24.6
New York	16.3	15.8	17.1	17.0
New Jersey	1.5	1.5	1.5	1.4
Pennsylvania	6.1	6.6	6.1	6.2
EAST NORTH CENTRAL	15.7	16.1	15.6	15.8
Ohio	3.1	3.1	3.4	3.0
Indiana	1.3	1.3	1.2	1.3
Illinois	5.9	5.7	5.5	5.6
Michigan	3.1	3.8	3.3	2.8
Wisconsin	2.3	2.2	2.2	3.1
WEST NORTH CENTRAL	7.2	7.3	7.3	7.5
Minnesota	2.5	2.5	2.4	2.5
Iowa	.9	1.0	1.0	1.0
Missouri	2.2	2.4	2.4	2.3
North Dakota	.1	.1	.1	.1
South Dakota	.1	.1	.1	0.0
Nebraska	.5	.4	.5	.7
Kansas	.9	.8	.8	.9
SOUTH ATLANTIC	13.1	12.9	12.5	13.3
Delaware	.1	.1	0.0	0.0
Maryland	4.1	4.0	4.1	4.0
District of Columbia	1.6	2.1	1.7	2.0
Virginia	1.2	1.1	1.2	1.4
West Virginia	.3	.2	.2	.2
North Carolina	3.0	2.3	2.4	2.7
South Carolina	.2	.2	.2	.3
Georgia	1.1	1.4	1.1	1.0
Florida	1.5	1.5	1.6	1.7
EAST SOUTH CENTRAL	3.7	3.7	3.5	3.8
Kentucky	.8	.6	.6	.6
Tennessee	1.7	1.7	1.6	1.6
Alabama	.9	1.0	.9	.9
Mississippi	.3	.4	.4	.7
WEST SOUTH CENTRAL	6.1	5.9	6.0	5.2
Arkansas	.4	.3	.3	.3
Louisiana	1.7	1.8	2.2	1.6
Oklahoma	.8	1.0	.9	.8
Texas	3.2	2.8	2.6	2.5
MOUNTAIN	2.7	2.5	2.3	2.7
Montana	.1	.1	.1	.1
Idaho	.1	0.0	0.0	0.0
Wyoming	0.0	.1	0.0	0.0
Colorado	1.1	1.1	1.1	1.3
New Mexico	.3	.2	.1	.1
Arizona	.2	.2	.2	.3
Utah	.9	.8	.8	.9
Nevada	0.0	0.0	0.0	0.0
PACIFIC	14.9	14.0	14.9	13.8
Washington	2.3	1.8	1.9	2.1
Oregon	1.3	1.3	1.3	1.5
California	11.0	10.6	11.6	10.0
Alaska	.1	.1	0.0	0.0
Hawaii	.2	.2	.1	.2

Source: DRG. SAB. DP. Computer printout. Data are for six NIH extramural programs.

Appendix Table 46
Distribution of NIH Extramural Funds Awarded by Program and Geographic Division, United States, Fiscal Year 1964

Location	Total NIH extramural funds, U.S.	Program					
		Research grants	Health research facilities	Training grants	Traineeships Fellowships	Health Research formula grants	Research contracts
Total dollars	$797,002,170	$483,686,679	$53,900,498	$164,562,533	$42,050,084	$10,622	$42,399,416
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Geographic location							
New England	12.7	13.0	12.0	12.1	16.4	7.8	10.9
Middle Atlantic	23.9	25.2	20.4	21.3	22.1	15.3	27.9
East North Central	15.7	15.5	18.3	15.3	18.2	16.6	12.1
West North Central	7.2	7.0	3.4	9.0	7.5	9.2	4.1
South Atlantic	13.1	11.3	13.2	14.4	12.4	15.4	26.4
East South Central	3.7	3.6	1.8	3.8	3.0	6.7	5.7
West South Central	6.1	6.4	5.2	6.4	4.3	8.8	2.3
Mountain	2.7	2.5	4.6	4.6	2.7	8.6	1.0
Pacific	14.9	15.5	21.1	13.1	13.4	11.6	9.6
NEW ENGLAND	12.7	13.0	12.0	12.1	16.4	7.8	10.9
Maine	.2	.3	0	.1	.1	1.1	.5
New Hampshire	.3	.4	0	.2	.5	1.1	0
Vermont	.3	.3	0	.4	.4	1.1	0.0
Massachusetts	9.2	9.9	4.6	8.4	11.8	2.2	10.1
Rhode Island	.5	.4	.7	.5	.5	1.1	.1
Connecticut	2.2	1.7	6.7	2.5	3.1	1.2	.2
MIDDLE ATLANTIC	23.9	25.2	20.4	21.3	22.1	15.3	27.9
New York	16.3	17.4	16.5	14.2	14.7	7.4	16.3
New Jersey	1.5	1.3	.3	1.1	.9	2.7	6.5
Pennsylvania	6.1	6.5	3.6	6.0	6.5	5.2	5.1
EAST NORTH CENTRAL	15.7	15.5	18.3	15.3	18.2	16.6	12.1
Ohio	3.1	3.4	1.0	3.0	3.8	4.6	1.9
Indiana	1.3	1.4	.2	1.3	1.6	2.1	1.1
Illinois	5.9	5.5	11.0	5.8	6.7	4.4	3.8
Michigan	3.1	3.1	2.7	3.3	2.9	3.6	2.7
Wisconsin	2.3	2.1	3.4	1.9	3.2	1.9	2.6
WEST NORTH CENTRAL	7.2	7.0	3.4	9.0	7.5	9.2	4.1
Minnesota	2.5	2.7	.8	3.0	2.9	1.6	.8
Iowa	.9	.9	0	1.2	1.3	1.2	.1
Missouri	2.2	2.1	2.3	2.9	1.9	2.0	1.6
North Dakota	.1	.1	0	.1	.1	1.1	0
South Dakota	.1	.1	0	0.0	0	1.1	0.0
Nebraska	.5	.4	0	.6	.2	1.1	.3
Kansas	.9	.7	.3	1.2	1.1	1.1	1.3
SOUTH ATLANTIC	13.1	11.3	13.2	14.4	12.4	15.4	26.4
Delaware	.1	.1	0	0.0	.1	1.1	.1
Maryland	4.1	3.7	2.1	3.7	5.0	1.4	13.2
District of Columbia	1.6	1.4	.2	2.2	.9	1.1	5.0
Virginia	1.2	.9	.2	1.1	.8	2.1	6.2
West Virginia	.3	.2	0	.3	.2	1.1	.1
North Carolina	3.0	2.3	9.1	3.6	3.2	2.5	.8
South Carolina	.2	.2	0	.3	.1	1.4	0
Georgia	1.1	1.1	.3	1.3	.9	2.1	.1
Florida	1.5	1.4	1.3	1.9	1.2	2.6	.9
EAST SOUTH CENTRAL	3.7	3.6	1.8	3.8	3.0	6.7	5.7
Kentucky	.8	.8	.2	.9	.7	1.6	.2
Tennessee	1.7	1.8	.5	2.0	1.7	1.9	.1
Alabama	.9	.7	1.1	.5	.3	1.8	5.4
Mississippi	.3	.3	0	.4	.3	1.4	0
WEST SOUTH CENTRAL	6.1	6.4	5.2	6.4	4.3	8.8	2.3
Arkansas	.4	.4	0	.3	.2	1.1	0
Louisiana	1.7	1.9	.3	2.0	1.1	1.7	.5
Oklahoma	.8	.9	0.0	1.1	.7	1.2	0.0
Texas	3.2	3.2	4.9	3.0	2.3	4.8	1.8
MOUNTAIN	2.7	2.5	4.6	4.6	2.7	8.6	1.0
Montana	.1	.1	.2	0.0	.1	1.1	0
Idaho	.1	.1	0	0.0	0.0	1.1	0.0
Wyoming	0.0	0.0	0	0.0	0	1.0	0.0
Colorado	1.1	1.1	.5	1.4	1.2	1.1	.3
New Mexico	.3	.2	2.4	.1	0.0	1.1	0.0
Arizona	.2	.2	.6	2.0	.1	1.1	.2
Utah	.9	.8	.9	1.1	1.3	1.1	.5
Nevada	0.0	0.0	0	0.0	0	1.0	0.0
PACIFIC	14.9	15.5	21.1	13.1	13.4	11.6	9.6
Washington	2.3	2.0	5.5	2.6	1.9	1.3	.2
Oregon	1.3	1.6	.2	1.1	1.0	1.0	.4
California	11.0	11.6	14.5	9.2	10.4	7.1	8.3
Alaska	.1	.1	.9	0	0.0	1.1	0
Hawaii	.2	.2	0	.2	.1	1.1	.7

Source: DHEW. PHS. NIH. DRG. SAB. Computer printout. Data are for six NIH extramural programs.

Appendix Table 47

Distribution of NIH Extramural Funds Awarded by Program and Geographic Division
United States, Fiscal Year 1963

Location	Total NIH extramural funds, U.S.	Program					
		Research grants	Health research facilities	Training grants	Traineeships Fellowships	Health research formula grants	Research contracts
Total dollars	$690,934,607	$416,141,710	$51,309,084	$139,376,340	$35,505,966	$10,596,649	$38,004,858
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Geographic division							
New England	13.7	13.7	15.7	12.2	16.0	7.8	14.2
Middle Atlantic	23.9	25.3	18.0	21.5	21.0	15.3	30.6
East North Central	16.1	15.6	23.4	15.4	16.6	16.7	12.7
West North Central	7.3	7.0	6.2	9.4	8.0	9.4	2.5
South Atlantic	12.9	11.9	9.4	14.6	13.8	15.3	24.1
East South Central	3.7	3.5	3.0	3.8	3.3	6.9	6.0
West South Central	5.9	5.8	7.9	6.8	4.2	8.6	2.2
Mountain	2.5	2.1	4.2	2.9	2.8	8.4	.9
Pacific	14.0	15.1	12.2	13.4	14.3	11.6	6.8
NEW ENGLAND	13.7	13.7	15.7	12.2	16.0	7.8	14.2
Maine	.3	.3	.1	.1	.1	1.0	.7
New Hampshire	.3	.3	0	.2	.4	1.1	0
Vermont	.4	.4	0	.4	.4	1.1	0
Massachusetts	10.1	10.6	8.5	8.6	11.7	2.3	13.2
Rhode Island	.4	.4	.4	.6	.4	1.1	0
Connecticut	2.2	1.7	6.7	2.3	3.0	1.2	.3
MIDDLE ATLANTIC	23.9	25.3	18.0	21.5	21.0	15.3	30.6
New York	15.8	17.2	9.9	14.2	13.8	7.3	18.5
New Jersey	1.5	1.3	1.4	1.1	1.0	2.7	5.8
Pennsylvania	6.6	6.8	6.7	6.2	6.2	5.3	6.3
EAST NORTH CENTRAL	16.1	15.6	23.4	15.4	16.6	16.7	12.7
Ohio	3.1	3.4	.8	3.0	3.2	4.5	2.0
Indiana	1.3	1.3	.6	1.3	1.7	2.2	.5
Illinois	5.7	5.6	8.3	5.8	5.8	4.5	4.1
Michigan	3.8	3.2	9.9	3.4	3.3	3.6	3.8
Wisconsin	2.2	2.1	3.8	1.9	2.6	1.9	2.3
WEST NORTH CENTRAL	7.3	7.0	6.2	9.4	8.0	9.4	2.5
Minnesota	2.5	2.7	1.2	2.9	3.1	1.7	0
Iowa	1.0	.9	.6	1.3	1.4	1.3	0
Missouri	2.4	2.2	3.6	3.1	2.1	2.1	1.3
North Dakota	.1	.1	.3	.1	.2	1.1	0
South Dakota	.1	.1	.1	.1	0.0	1.1	0
Nebraska	.4	.4	.1	.7	.2	1.0	.1
Kansas	.8	.6	.3	1.2	1.0	1.1	1.1
SOUTH ATLANTIC	12.9	11.9	9.4	14.6	13.8	15.3	24.1
Delaware	.1	.1	.6	0	.1	1.1	.1
Maryland	4.0	3.7	2.0	3.9	5.4	1.5	9.3
District of Columbia	2.1	1.8	0	2.3	1.4	1.1	8.5
Virginia	1.1	.9	.3	1.1	1.0	2.0	4.7
West Virginia	.2	.2	0	.2	.3	1.1	0
North Carolina	2.3	2.2	.6	3.6	3.2	2.5	.7
South Carolina	.2	.2	.1	.3	.1	1.4	.1
Georgia	1.4	1.2	4.8	1.3	.9	2.1	.2
Florida	1.5	1.6	1.0	1.9	1.4	2.5	.5
EAST SOUTH CENTRAL	3.7	3.5	3.0	3.8	3.3	6.9	6.0
Kentucky	.6	.7	0	.8	.7	1.7	.1
Tennessee	1.7	1.7	2.7	1.9	1.7	2.0	.2
Alabama	1.0	.7	.3	.7	.4	1.8	5.7
Mississippi	.4	.4	0	.4	.5	1.4	0
WEST SOUTH CENTRAL	5.9	5.8	7.9	6.8	4.2	8.6	2.2
Arkansas	.3	.3	.3	.4	.2	1.1	0
Louisiana	1.8	1.7	4.0	2.1	1.3	1.7	.2
Oklahoma	1.0	.8	2.7	1.2	.6	1.2	.1
Texas	2.8	3.0	.9	3.1	2.1	4.6	1.9
MOUNTAIN	2.5	2.1	4.2	2.9	2.8	8.4	.9
Montana	.1	.1	.3	.1	.2	1.1	0
Idaho	0	0.0	0	0	0.0	1.1	0
Wyoming	.1	0.0	0	0	0	1.1	0
Colorado	1.1	1.0	1.3	1.4	1.1	.9	.4
New Mexico	.2	.2	.9	.1	0.0	1.1	0
Arizona	.2	.2	.1	.2	.2	1.0	.5
Utah	.8	.6	1.6	1.1	1.3	1.0	0
Nevada	0	0.0	0	0.0	0	1.1	0
PACIFIC	14.0	15.1	12.2	13.4	14.3	11.6	6.8
Washington	1.8	1.8	.5	2.5	2.5	1.3	.2
Oregon	1.3	1.5	1.1	1.3	.9	1.1	.1
California	10.6	11.5	10.6	9.4	10.8	7.0	6.3
Alaska	.1	.1	0	0	0.0	1.1	0
Hawaii	.2	.2	0	.2	.1	1.1	.2

Source: DHEW. PHS. NIH. DRG. SAB. Computer printout.

Appendix Table 48

Distribution of NIH Funds Awarded Under the Research Grant Program, the Training Grant Program, Fellowships-Traineeships, and Health Research Facilities Awards, by Leading States. Fiscal Years 1954, 1960-1964

Location	Research grant funds to leading states, selected fiscal years			
	1964	1962	1960	1954
Total dollars, U.S.	$483,685,000	$358,296,230	$193,270,227	$30,822,648
Percent	100.0	100.0	100.0	100.0
Leading states under this program	64.3	64.5	64.4	68.0
New York	17.4	16.1	17.5	17.6
California	11.6	12.3	11.2	10.6
Massachusetts	9.9	10.9	10.8	14.0
Pennsylvania	6.5	6.4	6.9	6.6
Illinois	5.5	5.5	5.6	7.3
Maryland	3.7	3.7	3.4	3.5
Ohio	3.4	3.8	3.2	3.8
Texas	3.2	2.5	2.3	1.7
Michigan	3.1	3.3	3.5	2.9
All Other states	35.7	35.5	35.6	32.0

Location	Training grant funds to leading states, selected fiscal years			
	1964	1962	1960	1954
Total dollars, U.S.	$164,562,533	$114,775,368	$73,150,852	$7,885,324
Percent	100.0	100.0	100.0	100.0
Leading states under this program	66.1	67.5	67.5	61.9
New York	14.2	14.4	13.8	11.7
California	9.2	9.4	8.6	6.0
Massachusetts	8.4	8.8	9.5	6.4
Pennsylvania	6.0	6.0	6.3	7.9
Illinois	5.8	5.7	5.3	6.7
Maryland	3.7	4.1	4.5	3.0
North Carolina	3.6	3.5	3.7	3.7
Michigan	3.3	3.4	3.3	2.3
Missouri	2.9	3.6	3.4	5.1
Texas	3.0	2.8	2.7	2.0
Ohio	3.0	2.9	3.0	4.5
Minnesota	3.0	2.9	3.4	2.6
All other states	33.9	32.5	32.5	38.1

Location	Fellowship-Traineeship funds to leading states, selected fiscal years			
	1964	1962	1960	1954
Total dollars, U.S.	$42,050,084	$27,339,975	$16,324,277	$4,640,876
Percent	100.0	100.0	100.0	100.0
Leading states under this program	74.2	72.9	72.3	77.1
New York	14.7	14.8	14.6	17.1
Massachusetts	11.8	11.9	13.5	16.7
California	10.4	10.3	9.6	8.2
Illinois	6.7	5.6	5.4	5.3
Pennsylvania	6.5	5.9	4.9	7.9
Maryland	5.0	6.3	7.0	4.2
Ohio	3.8	3.2	3.2	4.2
North Carolina	3.2	3.4	2.6	3.3
Wisconsin	3.2	2.6	2.5	1.5
Connecticut	3.1	3.0	2.9	3.1
Minnesota	2.9	3.2	3.5	3.8
Michigan	2.9	2.7	2.6	1.8
All other states	25.8	27.1	27.7	22.9

Location	Health research facilities funds to leading states, selected fiscal years			
	1964	1962	1960	1954
Total dollars, U.S.	$53,900,498	$36,759,341	$30,718,102	0
Percent	100.0	100.0	100.0	0
Leading states under this program	85.4	78.3	63.6	0
New York	16.5	34.9	13.5	0
California	14.5	17.5	12.4	0
Illinois	11.0	6.2	4.9	0
North Carolina	9.1	.8	3.0	0
Connecticut	6.7	0.0	0.0	0
Washington	5.5	.7	1.7	0
Texas	4.9	4.7	8.5	0
Massachusetts	4.6	2.0	10.8	0
Pennsylvania	3.6	3.4	6.7	0
Wisconsin	3.4	.4	.3	0
Michigan	2.7(9.9 in 1963)	2.4	.2	0
Missouri	2.3(3.6 in 1963)	.5	1.2	0
Georgia	.3(4.8 in 1963)	.8	.4	0
Louisiana	.3(4.0 in 1963)	4.0	0.0	0
All other states	14.6	21.7	36.4	0

Appendix Table 49
Distribution of Total NIH Research Grant Funds Awarded, by Geographic Division
United States, Fiscal Years 1954, 1959-1964

Location	1964	1962	1960	1954
Total dollars	$483,686,679	$358,296,230	$193,270,227	$30,632,093
Total percent	100.0	100.0	100.0	100.0
Geographic division				
New England	13.0	14.2	14.6	17.8
Middle Atlantic	25.2	23.8	25.4	24.6
East North Central	15.5	16.4	15.4	16.5
West North Central	7.0	7.0	7.4	7.9
South Atlantic	11.3	11.6	11.7	10.2
East South Central	3.6	2.9	2.9	2.2
West South Central	6.4	5.9	4.8	4.4
Mountain	2.5	2.3	2.5	3.3
Pacific	15.5	15.9	15.3	13.1
NEW ENGLAND	13.0	14.2	14.6	17.8
Maine	.3	.3	.4	.7
New Hampshire	.4	.3	.4	.2
Vermont	.3	.3	.3	.3
Massachusetts	9.9	10.9	10.8	14.0
Rhode Island	.4	.4	.6	.2
Connecticut	1.7	2.0	2.1	2.4
MIDDLE ATLANTIC	25.2	23.8	25.4	24.6
New York	17.4	16.1	17.5	17.6
New Jersey	1.3	1.3	1.0	.4
Pennsylvania	6.5	6.4	6.9	6.6
EAST NORTH CENTRAL	15.5	16.4	15.4	16.5
Ohio	3.4	3.8	3.2	3.8
Indiana	1.4	1.4	1.1	.8
Illinois	5.5	5.5	5.6	7.3
Michigan	3.1	3.3	3.5	2.9
Wisconsin	2.1	2.4	2.0	1.7
WEST NORTH CENTRAL	7.0	7.0	7.4	7.9
Minnesota	2.7	2.5	2.7	2.6
Iowa	.9	.9	.9	.9
Missouri	2.1	2.3	2.4	2.7
North Dakota	.1	.1	.1	.1
South Dakota	.1	.1	.1	.1
Nebraska	.4	.3	.4	.3
Kansas	.7	.8	.8	1.2
SOUTH ATLANTIC	11.3	11.6	11.7	10.2
Delaware	.1	0.0	.1	.1
Maryland	3.7	3.7	3.4	3.5
District of Columbia	1.4	1.6	2.1	2.0
Virginia	.9	1.0	.8	.7
West Virginia	.2	.2	.1	0.0
North Carolina	2.3	2.3	2.0	2.0
South Carolina	.2	.2	.3	.3
Georgia	1.1	1.1	1.4	.9
Florida	1.4	1.5	1.5	.7
EAST SOUTH CENTRAL	3.6	2.9	2.9	2.2
Kentucky	.8	.7	.6	.3
Tennessee	1.8	1.4	1.4	1.2
Alabama	.7	.5	.6	.6
Mississippi	.3	.3	.3	.1
WEST SOUTH CENTRAL	6.4	5.9	4.8	4.4
Arkansas	.4	.3	.3	.3
Louisiana	1.9	2.3	1.4	1.7
Oklahoma	.9	.8	.7	.7
Texas	3.2	2.5	2.4	1.7
MOUNTAIN	2.5	2.3	2.5	3.3
Montana	.1	.1	.1	.2
Idaho	.1	0.0	0.0	.1
Wyoming	0.0	.1	0.0	0
Colorado	1.1	1.1	.9	1.1
New Mexico	.2	.1	.1	.1
Arizona	.2	.2	.3	.1
Utah	.8	.7	1.1	1.7
Nevada	0.0	0.0	0.0	0
PACIFIC	15.5	15.9	15.3	13.1
Washington	2.0	1.9	1.7	1.8
Oregon	1.6	1.5	2.2	.7
California	11.6	12.3	11.2	10.6
Alaska	.1	0.0	0.0	0
Hawaii	.2	.2	.2	0.0

Source: DRG. SAB. DP. Computer printout for each year.

Appendix Table 50
Percent Distribution of Total NIH Training Grant Funds Awarded, by Geographic Division.
Fiscal Years 1954, 1959 - 1964

Location	1964	1962	1960	1954
Total dollars	$164,562,533	$114,775,368	$73,150,852	$9,762,011
Total percent	100.0	100.0	100.0	100.0
Geographic division				
New England	12.1	12.6	13.6	9.2
Middle Atlantic	21.3	21.6	20.8	19.6
East North Central	15.3	15.2	14.9	17.7
West North Central	9.0	9.4	10.1	14.0
South Atlantic	14.4	14.7	14.8	16.2
East South Central	3.8	3.7	4.1	6.0
West South Central	6.4	6.6	6.4	5.9
Mountain	4.6	2.8	3.1	2.5
Pacific	13.1	13.4	12.2	8.9
NEW ENGLAND	12.1	12.6	13.6	9.2
Maine	.1	.1	.2	0
New Hampshire	.2	.3	.2	.1
Vermont	.4	.4	.4	.8
Massachusetts	8.4	8.8	9.5	6.4
Rhode Island	.5	.6	.6	0
Connecticut	2.5	2.4	2.7	1.9
MIDDLE ATLANTIC	21.3	21.6	20.8	19.6
New York	14.2	14.4	13.8	11.7
New Jersey	1.1	1.2	.7	0
Pennsylvania	6.0	6.0	6.3	7.9
EAST NORTH CENTRAL	15.3	15.2	14.9	17.7
Ohio	3.0	2.9	3.0	4.5
Indiana	1.3	1.1	1.4	1.0
Illinois	5.8	5.7	5.3	6.7
Michigan	3.3	3.4	3.3	2.3
Wisconsin	1.9	2.1	1.9	3.2
WEST NORTH CENTRAL	9.0	9.4	10.1	14.0
Minnesota	3.0	2.9	3.4	2.6
Iowa	1.2	1.1	1.3	1.9
Missouri	2.9	3.6	3.4	5.1
North Dakota	.1	.1	.1	.2
South Dakota	0.0	.1	.1	.4
Nebraska	.6	.6	.7	1.9
Kansas	1.2	1.0	1.1	1.9
SOUTH ATLANTIC	14.4	14.7	14.8	16.2
Delaware	0.0	0	0	0
Maryland	3.7	4.1	4.5	3.0
District of Columbia	2.2	2.3	2.5	4.3
Virginia	1.1	1.1	1.1	1.6
West Virginia	.3	.2	.2	.2
North Carolina	3.6	3.5	3.7	3.7
South Carolina	.3	.3	.3	.7
Georgia	1.3	1.3	1.0	2.0
Florida	1.9	1.9	1.5	.7
EAST SOUTH CENTRAL	3.8	3.7	4.1	6.0
Kentucky	.9	.7	.7	1.6
Tennessee	2.0	1.9	2.5	3.2
Alabama	.5	.7	.6	.9
Mississippi	.4	.4	.3	.3
WEST SOUTH CENTRAL	6.4	6.6	6.4	5.9
Arkansas	.3	.4	.4	.7
Louisiana	2.0	2.2	2.4	2.4
Oklahoma	1.1	1.2	.9	.8
Texas	3.0	2.8	2.7	2.0
MOUNTAIN	4.6	2.8	3.1	2.5
Montana	0.0	.1	0.0	0
Idaho	0.0	0	0	0
Wyoming	0.0	0	0	0
Colorado	1.4	1.3	1.5	1.3
New Mexico	.1	0.0	0.0	0
Arizona	2.0	.1	0.0	0
Utah	1.1	1.3	1.6	1.2
Nevada	0.0	0	0	0
PACIFIC	13.1	13.4	12.2	8.9
Washington	2.6	2.7	2.5	1.9
Oregon	1.1	1.2	.9	.9
California	9.2	9.4	8.6	6.0
Alaska	0	0	0	0
Hawaii	.2	.1	.2	.1

Source: DRG. SAB. DP. Computer printout for each year.

Appendix Table 51

Percent Distribution of Total NIH Health Research Facility (Construction) Funds Awarded, by Geographic Division
Fiscal Years 1959 - 1964

Location	1964	1963	1962	1961	1960	1959
Total dollars	$53,900,498	$51,309,084	$36,759,841	$37,989,582	$30,718,102	$31,571,909
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Geographic division						
New England	12.0	15.7	3.5	10.5	12.5	9.1
Middle Atlantic	20.4	18.0	39.2	22.2	20.4	25.2
East North Central	18.3	23.4	11.0	24.6	15.3	26.4
West North Central	3.4	6.2	7.1	3.6	7.2	4.8
South Atlantic	13.2	9.4	5.3	16.1	9.6	11.2
East South Central	1.8	3.0	3.8	4.9	4.6	8.4
West South Central	5.2	7.9	10.0	2.8	8.6	10.2
Mountain	4.6	4.2	1.9	5.7	1.9	1.5
Pacific	21.1	12.2	18.2	9.6	19.9	3.2
NEW ENGLAND	12.0	15.7	3.5	10.5	12.5	9.1
Maine	0	.1	0	0.0	.1	.1
New Hampshire	0	0	.1	0	0	3.2
Vermont	0	0	0	1.9	0.0	0.0
Massachusetts	4.6	8.5	2.0	7.6	10.8	5.2
Rhode Island	.7	.4	1.4	.3	1.6	.1
Connecticut	6.7	6.7	0	.7	0.0	.5
MIDDLE ATLANTIC	20.4	18.0	39.2	22.2	20.4	25.2
New York	16.5	9.9	34.9	16.1	13.5	17.8
New Jersey	.3	1.4	.9	.7	.2	3.9
Pennsylvania	3.6	6.7	3.4	5.4	6.7	3.5
EAST NORTH CENTRAL	18.3	23.4	11.0	24.6	15.3	26.4
Ohio	1.0	.8	1.9	3.3	6.6	8.1
Indiana	.2	.6	.1	1.4	3.3	.6
Illinois	11.0	8.3	6.2	9.7	4.9	11.2
Michigan	2.7	9.9	2.4	.2	.2	4.2
Wisconsin	3.4	3.8	.4	10.0	.3	2.3
WEST NORTH CENTRAL	3.4	6.2	7.1	3.6	7.2	4.8
Minnesota	.8	1.2	1.2	.3	.8	1.5
Iowa	0	.6	2.2	.9	1.4	.3
Missouri	2.3	3.6	.5	.2	1.2	.9
North Dakota	0	.3	1.2	0.0	.3	.3
South Dakota	0	.1	0	0.0	0	.4
Nebraska	0	.1	1.7	2.0	.3	.5
Kansas	.3	.3	.3	.2	3.2	.9
SOUTH ATLANTIC	13.2	9.4	5.3	16.1	9.6	11.2
Delaware	0	.6	0	0	0	0
Maryland	2.1	2.0	2.3	4.6	1.4	1.5
District of Columbia	.2	0	0	.2	1.9	0.0
Virginia	.2	.3	.8	5.3	2.2	1.4
West Virginia	0	0	0	0	0	.4
North Carolina	9.1	.6	.8	3.2	3.0	4.0
South Carolina	0	.1	0	1.3	0	0.0
Georgia	.3	4.8	.8	.1	.4	3.1
Florida	1.3	1.0	.6	1.4	.7	.8
EAST SOUTH CENTRAL	1.8	3.0	3.8	4.9	4.6	8.4
Kentucky	.2	0	0	.6	1.9	5.0
Tennessee	.5	2.7	2.4	0	2.2	2.4
Alabama	1.1	.3	.4	.4	.5	1.0
Mississippi	0	0	1.0	3.9	0	0
WEST SOUTH CENTRAL	5.2	7.9	10.0	2.8	8.6	10.2
Arkansas	0	.3	0	0	0	3.4
Louisiana	.3	4.0	4.0	.4	0	6.5
Oklahoma	0.0	2.7	1.3	.2	.1	.2
Texas	4.9	.9	4.7	2.2	8.5	.1
MOUNTAIN	4.6	4.2	1.9	5.7	1.9	1.5
Montana	.2	.3	0	0	1.0	.7
Idaho	0	0	0	0	0	.1
Wyoming	0	0	0	0	0	0
Colorado	.5	1.3	1.2	3.5	.7	.4
New Mexico	2.4	.9	0	0	0	.1
Arizona	.6	.1	0	.9	.2	.2
Utah	.9	1.6	.7	1.2	0	0
Nevada	0	0	0	.1	0	0
PACIFIC	21.1	12.2	18.2	9.6	19.9	3.2
Washington	5.5	.5	.7	3.0	1.7	2.1
Oregon	.2	1.1	0	0	5.8	.4
California	14.5	10.6	17.5	6.0	12.4	.7
Alaska	.9	0	0	0	0	0
Hawaii	0	0	0	.6	0	0

Source: DRG. SAB. DP. Computer printout for each year.

Appendix Table 52
Percent Distribution of Total NIH Fellowship - Traineeship Funds Awarded, by Geographic Division.
Fiscal Years 1954, 1959 - 1964

Location	1964	1962	1960	1954
Total dollars	$42,050,084	$27,318,046	$16,324,277	$2,849,360
Total percent	100.0	100.0	100.0	100.0
Geographic division				
New England	16.4	16.2	17.9	20.3
Middle Atlantic	22.1	21.5	20.2	25.2
East North Central	18.2	15.6	14.7	13.9
West North Central	7.5	8.0	8.4	9.0
South Atlantic	12.4	14.6	15.7	12.5
East South Central	3.0	3.8	3.8	2.2
West South Central	4.3	4.3	3.5	3.8
Mountain	2.7	2.4	2.2	2.6
Pacific	13.4	13.6	13.6	10.5
NEW ENGLAND	16.4	16.2	17.9	20.3
Maine	.1	.1	.1	.1
New Hampshire	.5	.3	.7	0
Vermont	.4	.5	.5	.2
Massachusetts	11.8	11.9	13.5	16.7
Rhode Island	.5	.4	.2	.2
Connecticut	3.1	3.0	2.9	3.1
MIDDLE ATLANTIC	22.1	21.5	20.2	25.2
New York	14.7	14.8	14.6	17.1
New Jersey	.9	.8	.7	.2
Pennsylvania	6.5	5.9	4.9	7.9
EAST NORTH CENTRAL	18.2	15.6	14.7	13.9
Ohio	3.8	3.2	3.2	4.2
Indiana	1.6	1.5	1.0	1.1
Illinois	6.7	5.6	5.4	5.3
Michigan	2.9	2.7	2.6	1.8
Wisconsin	3.2	2.6	2.5	1.5
WEST NORTH CENTRAL	7.5	8.0	8.4	9.0
Minnesota	2.9	3.2	3.5	3.8
Iowa	1.3	1.2	1.0	.7
Missouri	1.9	2.2	2.3	2.8
North Dakota	.1	.1	.2	0
South Dakota	0	.1	.1	0
Nebraska	.2	.2	.6	.1
Kansas	1.1	1.0	.7	1.6
SOUTH ATLANTIC	12.4	14.6	15.7	12.5
Delaware	.1	0.0	0.0	0
Maryland	5.0	6.3	7.0	4.2
District of Columbia	.9	1.7	2.5	3.0
Virginia	.8	.9	.8	.8
West Virginia	.2	.1	.1	0
North Carolina	3.2	3.4	2.6	3.3
South Carolina	.1	.1	.2	.1
Georgia	.9	.9	1.2	1.0
Florida	1.2	1.2	1.3	.1
EAST SOUTH CENTRAL	3.0	3.8	3.8	2.2
Kentucky	.7	.7	.6	.4
Tennessee	1.7	2.3	2.3	1.2
Alabama	.3	.5	.6	.6
Mississippi	.3	.3	.3	0
WEST SOUTH CENTRAL	4.3	4.3	3.5	3.8
Arkansas	.2	.1	.2	.1
Louisiana	1.1	1.2	1.0	2.0
Oklahoma	.7	.8	.5	.7
Texas	2.3	2.2	1.8	1.0
MOUNTAIN	2.7	2.4	2.2	2.6
Montana	.1	.1	.1	0
Idaho	0.0	0	0.0	0
Wyoming	0	0	0	0
Colorado	1.2	1.0	1.2	1.6
New Mexico	0.0	0.0	0	0
Arizona	.1	0.0	.1	0
Utah	1.3	1.3	.8	1.0
Nevada	0	0	0.0	0
PACIFIC	13.4	13.6	13.6	10.5
Washington	1.9	2.2	2.9	2.3
Oregon	1.0	1.1	1.0	0
California	10.4	10.3	9.6	8.2
Alaska	0.0	0	0	0
Hawaii	.1	0.0	.1	0

Source: DRG. SAB. DP. Computer printout for each year.

Appendix Table 53

Distribution of M.D. and Ph. D. Degrees Conferred and of Funds Awarded Under Selected NIH Extramural Programs to Universities Conferring These Degrees and to Other Recipients. United States. Fiscal Years 1954 and 1962

State	Earned degrees conferred at M.D. and Ph. D. level		Distribution of funds under four NIH extramural programs, fiscal year 1962 1/			Distribution of funds under three NIH extramural programs, fiscal year 1954 2/		
	1961 - 1962	1953 - 1954	All	MD/PhD university	Other recipient	All	MD/PhD university	Other recipient
Total	18,758	15,707	$537,171,414	$423,337,580	$113,833,834	$43,348,848	$33,880,852	$9,467,996
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New York	13.5	14.5	17.0	15.1	23.9	16.5	14.0	25.4
California	8.8	7.6	12.0	11.6	13.0	9.5	10.1	7.4
Illinois	7.5	9.0	5.6	5.9	4.5	7.0	7.0	6.8
Pennsylvania	6.6	7.3	6.1	5.8	7.4	7.0	7.0	7.0
Massachusetts	5.9	5.9	9.9	7.7	18.1	12.9	9.4	25.4
Michigan	4.9	4.2	3.2	3.6	1.8	2.6	3.1	.8
Ohio	3.9	4.1	3.5	3.2	4.4	4.0	4.0	3.8
Indiana	3.7	3.4	1.2	1.5	.2	.9	1.1	.2
Texas	3.6	3.5	2.7	3.1	1.1	1.7	2.0	.7
Wisconsin	3.3	3.6	2.2	2.7	.3	2.0	2.5	0.0
District of Columbia	2.5	2.6	1.6	1.2	3.0	2.5	2.4	3.1
Missouri	2.4	2.6	2.4	2.8	1.2	3.1	3.1	3.2
Iowa	2.4	2.8	1.0	1.2	.3	1.0	1.2	.6
North Carolina	2.3	2.4	2.5	3.0	.6	2.4	3.0	.3
Tennessee	2.3	2.4	1.6	2.0	.5	1.9	2.2	.8
Maryland	2.1	2.2	3.8	4.1	2.7	3.5	3.9	1.7
Minnesota	2.1	2.5	2.5	2.6	2.3	2.7	3.3	.6
Connecticut	1.9	1.9	2.0	2.2	1.1	2.4	2.9	.6
Louisiana	1.9	2.2	2.4	2.8	.8	1.9	2.1	1.0
New Jersey	1.9	1.1	1.3	1.3	1.2	.3	.2	.5
Florida	1.7	.6	1.5	1.6	1.2	.6	.4	1.3
Colorado	1.7	1.4	1.1	1.2	.7	1.2	1.3	.8
Washington	1.4	1.2	2.0	2.4	.7	1.9	2.4	.1
Virginia	1.3	1.5	1.0	1.2	.2	.9	1.1	.2
Oregon	1.1	.9	1.3	1.2	1.8	.6	.8	0
Kansas	1.1	1.2	.8	.8	.7	1.4	1.4	1.2
Georgia	1.1	1.0	1.2	1.3	.4	1.1	1.4	.3
Oklahoma	1.1	1.0	.9	.9	1.0	.7	.9	0
Nebraska	1.1	1.4	.5	.6	0.0	.6	.8	0
Utah	.7	.5	.9	1.1	.1	1.5	1.8	.4
Kentucky	.7	1.1	.6	.8	.2	.5	.7	0
Alabama	.6	.5	.5	.6	.1	.7	.6	.7
Arkansas	.6	.5	.3	.4	.1	.4	.5	0
Mississippi	.4	0.0	.4	.4	.3	.1	.1	0
Rhode Island	.4	.3	.5	.5	.5	.2	.2	.2
South Carolina	.4	.4	.2	.3	.1	.3	.4	0
Vermont	.2	.3	.3	.4	.1	.4	.5	.1
Arizona	.2	0.0	.2	.2	.2	0.0	0.0	0.0
New Mexico	.2	0.0	.1	0.0	.4	.1	0.0	.2
West Virginia	.1	.1	.2	.2	0.0	.1	.1	0
Montana	.1	0	.1	.1	.1	.1	0	.5
North Dakota	.1	0.0	.2	.2	.1	.1	.1	0
Wyoming	.1	.1	0.0	0.0	.1	0	0	0
Delaware	.1	.2	0.0	0.0	0.0	0.0	0	.1
Hawaii	0.0	0.0	.1	.1	.1	0.0	0.0	.1
New Hampshire	0.0	0	.3	0.0	1.2	.1	0	.6
South Dakota	0.0	0	.1	.1	0	.1	0	.7
Idaho	0.0	0	0.0	0.0	.1	0.0	0	.1
Alaska	0.0	0	0.0	0	.1	0	0	0
Maine	0.0	0	.2	0.0	.9	.5	0	2.5
Nevada	0	0	0.0	0	.1	0	0	0

1/ Four NIH extramural programs: research grants, training grants, health research facilities, and fellowships/traineeships.

2/ Three NIH extramural programs: research grants, training grants, and fellowships/traineeships

Appendix Table 54

Sponsoring Institutions Receiving Awards, by NIH Extramural Program and Type of Institution
United States and Possessions. Fiscal Years 1954-1962

NIH extramural program and type of sponsoring institution	1962		1961		1960		1959		1954	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
One or more NIH extramural programs	1,172 1/	100.0	1,102 1/	100.0	1,007 1/	100.0	877 1/	100.0	420 1/	100.0
Higher education 2/	374	31.9	353	32.0	321	31.9	303	34.5	175	41.7
Hospital	340	29.0	313	28.4	297	29.5	254	29.0	128	30.5
Government 3/	105	9.0	107	9.7	91	9.0	73	8.3	24	5.7
Research institute/other	353	30.1	329	29.9	298	29.6	247	28.2	93	22.1
Research grants	1,026	100.0	969	100.0	886	100.0	760	100.0	332	100.0
Higher education 2/	347	33.8	326	33.6	299	33.7	278	36.5	162	48.8
Hospital	289	28.2	264	27.3	245	27.7	206	27.1	96	28.9
Government 3/	91	8.9	91	9.4	81	9.1	67	8.8	16	4.8
Research institute/other	299	29.1	288	29.7	261	29.5	209	27.5	58	17.5
Construction (health research facilities)	80	100.0	109	100.0	130	100.0	150	100.0	0	0
Higher education 2/	55	68.8	65	59.6	79	60.8	92	61.3	0	0
Hospital	16	20.0	31	28.5	32	24.6	45	30.0	0	0
Government 3/	3	3.7	5	4.6	2	1.5	1	.7	0	0
Research institute/other	6	7.5	8	7.3	17	13.1	12	8.0	0	0
Training grants	421	100.0	371	100.0	309	100.0	285	100.0	167	100.0
Higher education 2/	197	46.8	178	48.0	161	52.1	156	54.7	110	65.9
Hospital	132	31.3	115	31.0	82	26.5	68	23.9	14	8.4
Government 3/	15	3.6	13	3.5	11	3.6	7	2.5	5	3.0
Research institute/other	77	18.3	65	17.5	55	17.8	54	18.9	38	22.7
Fellowships/Traineeships	256	100.0	224	100.0	239	100.0	215	100.0	157	100.0
Higher education 2/	149	58.2	146	65.2	141	59.0	136	63.3	79	50.3
Hospital	67	26.2	48	21.4	71	29.7	57	26.5	55	35.0
Government 3/	12	4.7	11	4.9	11	4.6	8	3.7	4	2.6
Research institute/other	28	10.9	19	8.5	16	6.7	14	6.5	19	12.1

1/ Number of sponsoring institutions receiving awards under one or more NIH extramural programs for each fiscal year is smaller than the total of institutions receiving awards under each of the programs because many institutions are awarded grants under two, three, or four programs.

2/ Including any hospital owned by a parent institution in this group.

3/ Excluding any institution of higher education or hospital under public control.

Source: Counts based on information on awards under each program, Public Health Service Grants and Awards publications by fiscal year.

Appendix Table 55

84 Leading Sponsoring Institutions of Higher Education, Each in Receipt of $1,000,000 or More in NIH Extramural Funds Under Four Programs, in Descending Order of NIH Awards Funded to All Units of the Institution, United States. Fiscal Year 1962

Rank	Institution of Higher Education	NIH funds under 4 programs, Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Enrollment in 1962 at institution
1	*University of California, all campuses, California 1/	$ 33,545,143	$ 23,265,549	$ 7,189,240	$ 3,090,354	91,045
2	Harvard University, all campuses, Massachusetts 2/	20,316,811	15,463,497	4,771,621	81,693	12,413
3	Columbia University, all campuses, New York 2/	17,182,839	9,276,250	4,289,849	3,616,740	24,000
4	Johns Hopkins University, Baltimore, Maryland 2/	13,319,385	8,677,247	4,142,138	500,000	8,240
5	*University of Michigan, all campuses, Michigan 1/	11,173,926	7,232,766	3,050,597	890,563	30,152
6	*University of Minnesota, all campuses, Minnesota 1/	11,024,772	6,913,424	3,658,152	453,196	45,849
7	University of Pennsylvania, all campuses, Pennsylvania 1/	10,290,049	6,467,004	2,883,562	939,483	18,347
8	University of Chicago, Chicago, Illinois 1/	9,893,388	6,243,413	2,839,600	810,375	8,233
9	*University of Wisconsin, all campuses, Wisconsin 1/	9,659,063	7,022,561	2,487,785	148,717	35,251
10	*University of Washington, Seattle, Washington 1/	9,602,717	6,115,512	3,487,205	0	23,906
11	New York University, all campuses, New York 1/	8,813,502	6,121,529	2,691,973	0	33,232
12	Yale University, New Haven, Connecticut 1/	8,533,634	5,489,843	3,043,791	0	8,364
13	Yeshiva University, New York City, New York 2/	8,496,239	4,511,799	2,249,109	1,735,331	3,275
14	*University of Texas, all campuses, Texas 1/	8,379,441	4,933,473	2,164,136	1,281,832	23,747
15	Tulane University of Louisiana, New Orleans, Louisiana 2/	8,344,886	6,193,780	2,151,106	0	7,107
16	*University of Illinois, all campuses, Illinois 1/	8,237,582	4,700,600	2,190,867	1,346,115	33,956
17	Washington University, St. Louis, Missouri 2/	8,032,036	4,875,306	2,984,214	172,516	14,602
18	Stanford University, all campuses, California 2/	7,746,694	5,119,548	2,412,811	214,335	9,934
19	Western Reserve University, Cleveland, Ohio 2/	6,779,611	4,485,933	2,293,678	0	8,056
20	Duke University, Durham, North Carolina 1/	6,476,164	4,434,619	2,041,545	0	6,345
21	University of Pittsburgh, Pittsburgh, Pennsylvania 2/	6,416,241	4,395,407	1,952,834	68,000	13,938
22	Cornell University, all campuses, New York 2/	5,935,681	4,360,305	1,575,376	0	12,687
23	*State University of New York, all campuses, New York 2/	5,384,519	3,812,919	1,571,600	0	42,860
24	*Indiana University, Bloomington, Indiana 1/	4,932,035	3,561,615	1,344,138	26,282	31,581
25	University of Rochester, Rochester, New York 1/	4,856,387	2,848,768	2,007,619	0	7,126
26	*University of North Carolina, all campuses, North Carolina 1/	4,691,755	2,516,960	2,174,795	0	19,369

Rank	Institution of Higher Education	NIH funds under 4 programs, Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Enrollment in 1962 at institution
27	*University of Colorado, Boulder, Colorado 1/	$ 4,624,405	$ 2,871,644	$ 1,325,148	$ 427,613	19,557
28	*University of Oregon, all campuses, Oregon 1/	4,606,806	3,033,156	1,573,650	0	10,609
29	University of Southern California, Los Angeles, California 2/	4,550,835	2,362,406	1,188,429	1,000,000	18,477
30	New York Medical College, New York City, New York 1/	4,467,685	1,642,857	274,847	2,549,981	502
31	*University of Iowa, Iowa City, Iowa 1/	4,367,221	2,338,297	1,279,182	749,742	12,114
32	*University of Maryland, all campuses, Maryland 1/	4,205,296	2,535,881	1,564,628	104,787	25,361
33	Northwestern University, all campuses, Illinois 2/	4,134,014	2,861,790	1,272,224	0	16,636
34	Baylor University, all campuses, Texas 2/	3,991,882	2,742,634	1,249,248	0	6,207
35	Emory University, Atlanta, Georgia 1/	3,970,960	2,576,990	1,163,155	230,815	4,646
36	*University of Utah, Salt Lake City, Utah 2/	3,953,325	2,166,579	1,786,746	0	13,448
37	University of Buffalo, Buffalo, New York 2/ 3/	3,797,684	2,746,670	941,384	109,630	15,714
38	Boston University, Boston, Massachusetts 2/	3,771,342	2,093,865	1,677,477	0	19,589
39	*University of Tennessee, all campuses, Tennessee 2/	3,743,258	2,126,021	1,136,523	480,714	17,394
40	*University of Oklahoma, all campuses, Oklahoma 1/	3,533,947	2,160,155	1,373,792	0	13,928
41	*Louisiana State University and Agricultural and Mechanical College, all campuses, Louisiana 2/	3,401,734	1,269,957	656,839	1,474,938	18,338
42	*University of Cincinnati, Cincinnati, Ohio 1/	3,356,241	1,909,878	954,073	492,290	20,261
43	*University of Florida, Gainesville, Florida 1/	3,349,001	2,264,589	1,084,412	0	13,826
44	Vanderbilt University, Nashville, Tennessee 1/	3,298,035	1,945,622	1,090,516	261,897	4,202
45	Massachusetts Institute of Technology, Cambridge, Massachusetts	3,266,532	2,309,150	704,692	252,690	6,695
46	*Ohio State University, all campuses, Ohio 1/	3,199,672	2,505,401	694,271	0	30,500
47	*University of Kansas, all campuses, Kansas 1/	3,133,994	2,116,407	1,017,587	0	11,434
48	*Wayne State University, Detroit, Michigan 2/	3,115,606	2,295,125	820,481	0	20,836
49	University of Miami, Coral Gables, Florida 2/	2,721,544	1,955,860	765,684	0	12,053
50	*Medical College of Virginia, Richmond, Virginia 1/	2,719,617	2,121,964	597,653	0	1,109
51	Tufts University, Medford, Massachusetts 2/	2,445,593	1,498,431	942,081	5,081	4,586
52	Jefferson Medical College of Philadelphia, Philadelphia, Pennsylvania 1/	2,429,760	1,829,303	600,457	0	684
53	Georgetown University, Washington, District of Columbia 1/	2,332,101	1,323,034	1,009,067	0	6,791
54	Seton Hall University, South Orange, New Jersey 2/	2,300,040	1,706,070	593,970	0	9,087

Rank	Institution of Higher Education	NIH funds under 4 programs, Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Enrollment in 1962 at institution
55	*University of Virginia, Charlottsville, Virginia 1/	$ 2,287,651	$ 1,180,789	$ 797,112	$ 309,750	11,130
56	*University of Alabama, all campuses, Alabama 1/	2,151,550	1,328,354	823,196	0	14,477
57	Rockefeller Institute, New York City, New York	2,043,907	1,768,540	275,367	0	89
58	St. Louis University, St. Louis, Missouri 1/	1,978,891	1,169,253	809,638	0	9,045
59	*Rutgers State University, New Brunswick, New Jersey	1,969,061	1,271,475	564,823	132,763	21,541
60	Temple University, Philadelphia, Pennsylvania 1/	1,925,950	1,389,178	536,772	0	20,698
61	*University of Louisville, Louisville, Kentucky 2/	1,807,045	1,125,867	681,178	0	6,652
62	California Institute of Technology, Pasadena, California	1,790,330	1,500,868	289,462	0	1,339
63	Marquette University, Milwaukee, Wisconsin 2/	1,751,569	1,175,015	576,554	0	10,078
64	Brown University, Providence, Rhode Island	1,648,059	1,094,138	507,721	46,200	4,281
65	*University of Vermont State Agricultural College, Burlington, Vermont 2/	1,647,353	1,058,734	588,619	0	4,076
66	Hahnemann Medical College and Hospital, Philadelphia, Pennsylvania 1/	1,621,921	1,250,156	371,765	0	423
67	*University of Mississippi, all campuses, Mississippi 1/	1,608,908	970,645	562,013	76,250	5,874
68	Wake Forest College, all campuses, North Carolina 2/	1,565,931	919,129	646,802	0	2,915
69	*University of Arkansas, all campuses, Arkansas 1/	1,535,315	1,106,560	428,755	0	7,899
70	*University of Nebraska, all campuses, Nebraska 1/	1,505,973	880,551	625,422	0	10,401
71	Loma Linda University, all campuses, California 1/	1,437,334	1,082,031	355,303	0	1,066
72	Brandeis University, Waltham, Massachusetts	1,413,090	578,787	484,724	349,579	1,751
73	Union College and University, all campuses, New York 2/	1,405,335	782,980	531,784	90,571	2,846
74	*University of Missouri, Columbia, Missouri 1/	1,399,443	943,537	448,606	7,300	19,494
75	*University of Kentucky, Lexington, Kentucky	1,381,050	1,108,783	272,267	0	11,242
76	Dartmouth College, Hanover, New Hampshire 2/	1,337,052	953,807	358,973	24,272	3,404
77	Chicago Medical College, Chicago, Illinois 2/	1,324,935	999,631	325,304	0	268
78	*Medical College of Georgia, Augusta, Georgia 1/	1,256,026	919,913	336,113	0	495
79	George Washington University, Washington, District of Columbia	1,197,531	820,862	376,669	0	14,031
80	*Purdue University, Lafayette, Indiana	1,099,597	781,408	318,189	0	22,316
81	Loyola University, Chicago, Illinois	1,038,631	617,532	421,099	0	10,354
82	*Howard University, Washington, District of Columbia 2/	1,033,347	507,286	526,061	0	6,288

Rank	Institution of Higher Education	NIH funds under 4 programs, Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Enrollment in 1962 at institution
83	Princeton University, Princeton, New Jersey	$ 1,016,039	$ 705,495	$ 310,544	$ 0	4,196
84	Creighton University, Omaha, Nebraska 2/	1,010,092	242,393	149,976	617,723	3,313

Sources: DHEW. OE. Education Directory, 1961-1962, Part 3. Higher Education. OE-50000-62. U. S. Govt. Print. Off., Washington, D.C., 1962.
DHEW. OE. Opening (Fall) Enrollment in Higher Education, 1962: Institutional Data. OE-54003-62. U. S. Govt. Print. Off., Washington, D.C., 1962.

* Indicates public control of institution.

1/ NIH dollar award data include grants to university-owned hospital and medical school.
2/ NIH dollar award data include grants to medical school.
3/ Became part of State University of New York, September 1, 1962 (Fiscal Year 1963).

Appendix Table 56

94 Leading Sponsoring Hospitals, Each in Receipt of $100,000 or More in NIH Extramural Funds Under Four Programs, in Descending Order of NIH Awards Funded to All Units of the Institution, United States. Fiscal Year 1962

Rank	Hospital 1/ (excluding hospitals owned by institution of higher education)	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	1962 hospital data	
						Beds	Personnel
1	Massachusetts General Hospital, Boston, Massachusetts (10) (Voluntary)	$ 4,848,173	$ 3,915,463	$ 932,710	$ 0	921	3,387
2	Memorial Hospital for Cancer and Allied Diseases, New York, New York (49) (Voluntary)	2,854,647	41,039	233,664	2,579,944	273	1,378
3	Mount Sinai Hospital, New York, New York (10) (Voluntary)	2,456,707	1,651,540	805,167	0	1,015	2,091
4	Michael Reese Hospital Medical Center and Foundation, Chicago, Illinois (10) (Voluntary)	1,463,378	1,006,460	339,838	117,080	869	2,062
5	Children's Hospital Medical Center, Boston, Massachusetts (50) (Voluntary)	1,369,239	959,086	410,153	0	354	1,080
6	*Francis Delafield Hospital, New York City Dept. of Hospitals, New York, New York (49) (City)	1,305,266	0	0	1,305,266	280	600
7	Montefiore Hospital, Bronx, New York (10) (Voluntary)	1,292,997	1,106,787	186,210	0	665	1,541
8	Massachusetts Memorial Hospital, Boston, Massachusetts (10) (Voluntary)	1,256,400	947,631	308,769	0	236	776
9	New England Center and Hospital, Boston, Massachusetts (10) (Voluntary)	1,255,039	901,707	353,332	0	215	767
10	Children's Hospital Society of Los Angeles, Los Angeles, California (50) (Voluntary)	1,218,479	1,075,517	142,962	0	224	795
11	Children's Hospital, Philadelphia, Pennsylvania (50) (Voluntary)	1,047,269	891,642	155,627	0	164	694
12	Scripps Clinic and Research Foundation, La Jolla, California (49) (Voluntary)	1,025,053	744,664	280,389	0	51	236
13	Presbyterian Medical Center, San Francisco, California (10) (Voluntary) 2/	989,486	619,485	95,801	274,200	237	490
14	Presbyterian - St. Luke's Hospital, Chicago, Illinois (10) (Voluntary)	940,501	854,533	85,968	0	849	2,534
15	Children's Hospital of Columbus, Columbus, Ohio (50) (Voluntary)	843,961	693,461	7,500	143,000	335	652
16	Pennsylvania Hospital, Philadelphia, Pennsylvania (10) (Voluntary)	842,751	673,025	169,726	0	385	758
17	Albert Einstein Medical Center Hospital, Philadelphia, Pennsylvania (10) (Voluntary)	784,530	680,690	103,840	0	879	2,108
18	Boston Lying-In Hospital, Boston, Massachusetts (44) (Voluntary)	773,414	772,914	500	0	175	524
19	City of Hope Medical Center, Duarte, California (49) (Voluntary)	757,433	720,767	36,666	0	174	626
20	*University Hospitals of Cleveland, Cleveland, Ohio (10) (Voluntary) 3/	739,137	667,972	27,809	43,356	931	2,286
21	Mount Zion Hospital and Medical Center, San Francisco, California (10) (Voluntary)	728,702	443,683	127,519	157,500	346	761
22	*Pacific State Hospital, Pomona, California (62) (State)	710,897	198,397	0	512,500	2,888	1,392
23	Sinai Hospital, Baltimore, Maryland (10) (Voluntary)	696,065	624,879	71,186	0	442	1,399
24	*Philadelphia General Hospital and Research Foundation, Philadelphia, Pennsylvania (10) (City) 4/	646,172	479,716	166,456	0	1,802	2,340
25	Massachusetts Eye and Ear Infirmary, Boston, Massachusetts (45) (Voluntary)	568,673	444,602	124,071	0	170	426

Rank	Hospital 1/	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	1962 hospital data Beds	Personnel
26	Beth Israel Hospital, Boston, Massachusetts (10) (Voluntary)	$ 540,235	$ 219,634	$ 320,601	$ 0	348	1,060
27	Children's Hospital of Cincinnati, Cincinnati, Ohio (50) (Voluntary) 5/	507,513	473,365	34,148	0	215	486
28	*Massachusetts Mental Health Center, Boston, Massachusetts (22) (State)	485,957	457,813	28,144	0	228	270
29	*Charity Hospital of Louisiana at New Orleans, New Orleans, Louisiana (10) (State)	460,755	460,755	0	0	2,778	3,526
30	Henry Ford Hospital, Detroit, Michigan (10) (Voluntary)	448,099	406,914	41,185	0	1,036	2,924
31	Mary Imogene Bassett Hospital, Cooperstown, New York (10) (Voluntary)	439,215	300,169	69,336	69,710	104	344
32	St. Luke's Hospital, New York, New York (10) (Voluntary)	426,269	176,624	144,202	105,443	581	1,518
33	Children's Hospital of Pittsburgh, Pittsburgh, Pennsylvania (50) (Voluntary)	415,591	408,391	7,200	0	290	556
34	*Cook County Hospital and Hektoen Institute for Medical Research Chicago, Illinois (10) (County)	407,951	341,225	66,726	0	3,002	Not Stated
35	Cedars of Lebanon Hospital, Los Angeles, California (10) (Voluntary)	391,689	357,349	34,340	0	467	1,490
36	Robert B. Brigham Hospital, Boston, Massachusetts (49) (Voluntary)	387,454	356,868	30,586	0	70	162
37	Maimonides Hospital of Brooklyn, Brooklyn, New York (10) (Voluntary)	371,582	342,657	28,925	0	514	1,150
38	*Langley Porter Neuropsychiatric Institute, San Francisco, California (22) (State)	368,563	350,950	17,613	0	117	297
39	Institute of Living, Hartford, Connecticut (22) (Voluntary)	344,419	195,398	149,021	0	400	703
40	Johns Hopkins Hospital, Baltimore, Maryland (10) (Voluntary)	326,255	67,320	33,935	225,000	1,029	2,701
41	Children's Hospital of Buffalo, Buffalo, New York (50) (Voluntary)	325,735	316,636	9,099	0	311	808
42	Children's Hospital and Research Foundation, Washington, D. C. (50) (Voluntary)	324,003	192,938	131,065	0	222	582
43	St. Vincent's Hospital of the City of New York, New York, New York (10) (Voluntary)	313,862	155,548	112,904	45,410	768	1,551
44	Hillside Hospital, Glen Oaks, New York (22) (Voluntary)	305,031	218,329	86,702	0	196	374
45	Jewish Chronic Disease Hospital, Brooklyn, New York (48) (Voluntary)	292,509	292,509	0	0	798	1,092
46	Jewish Hospital and Medical Center, Cincinnati, Ohio (10) (Voluntary)	277,703	239,691	0	38,012	431	1,021
47	*Lafayette Clinic, Detroit, Michigan (22) (State)	277,668	151,603	126,065	0	145	302
48	Peter Bent Brigham Hospital, Boston, Massachusetts (10) (Voluntary)	262,940	84,564	178,376	0	282	836
49	*Camarillo State Hospital, Camarillo, California (22) (State)	256,975	244,015	12,960	0	6,520	2,018
50	Christ Hospital, Cincinnati, Ohio (10) (Voluntary) 6/	250,742	250,742	0	0	463	1,067
51	McLean Hospital, Belmont, Massachusetts (22) (Voluntary)	249,755	129,084	120,671	0	275	532
52	*Wills Eye Hospital, Philadelphia, Pennsylvania, (45) (City)	246,788	161,727	85,061	0	230	331
53	*Baltimore City Hospital, Baltimore, Maryland (10) (City)	234,592	227,092	7,500	0	2,069	1,573

Rank	Hospital [1]	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	1962 hospital data: Beds	1962 hospital data: Personnel
54	Hospital for Special Surgery, New York, New York (47) (Voluntary)	$ 230,762	$ 209,162	$ 21,600	$ 0	196	621
55	*Highland Alameda County Hospital, Oakland, California (10) (County)	219,915	219,915	0	0	456	915
56	Philadelphia Psychiatric Hospital, Philadelphia, Pennsylvania (22) (Voluntary)	219,801	115,313	104,488	0	142	165
57	Mount Sinai Hospital, Los Angeles, California (10) (Voluntary) [7]	200,845	47,523	153,322	0	224	594
58	Variety Children's Hospital and Research Foundation, Miami, Florida (50) (Voluntary)	199,020	131,656	67,364	0	116	270
59	Jewish Hospital of Brooklyn, Brooklyn, New York (10) (Voluntary)	193,048	125,860	67,188	0	501	1,474
60	Children's Hospital of San Francisco, San Francisco, California (50) (Voluntary)	191,176	126,086	65,090	0	258	552
61	Rhode Island Hospital, Providence, Rhode Island (10) (Voluntary)	176,492	33,465	32,400	110,627	678	1,719
62	Boston Dispensary and Rehabilitation Institute, Boston, Massachusetts (49) (Voluntary)	164,449	151,530	12,919	0	23	179
63	Ochsner Foundation Hospital, New Orleans, Louisiana (10) (Voluntary) [8]	163,304	163,304	0	0	328	702
64	St. Christopher's Hospital for Children, Philadelphia, Pennsylvania (50) (Voluntary)	159,735	98,839	60,896	0	100	300
65	*City Hospital at Elmhurst, Elmhurst, New York (10) (City)	156,581	114,245	42,336	0	941	1,982
66	St. Joseph Hospital, Burbank, California (10) (Voluntary)	148,908	148,908	0	0	250	535
67	Presbyterian Hospital in Philadelphia, Philadelphia, Pennsylvania (10) (Voluntary)	148,698	77,073	71,625	0	328	660
68	Sinai Hospital of Detroit, Detroit, Michigan (10) (Voluntary)	138,743	101,499	37,244	0	387	810
69	Allegheny General Hospital, Pittsburgh, Pennsylvania (10) (Voluntary)	136,985	136,985	0	0	560	1,200
70	Charles T. Miller Hospital, St. Paul, Minnesota (10) (Voluntary)	136,651	96,939	39,712	0	401	911
71	Jewish Hospital of St. Louis, St. Louis, Missouri (10) (Voluntary)	135,323	117,203	18,120	0	498	1,059
72	Evanston Hospital, Evanston, Illinois (10) (Voluntary)	132,771	75,613	57,158	0	410	871
73	Austen Riggs Center, Inc., Stockbridge, Massachusetts (22) (Voluntary)	131,616	28,486	103,130	0	42	97
74	*Rockland State Hospital, Orangeburg, New York (22) (State)	123,969	123,969	0	0	6,800	2,318
75	Mount Sinai Hospital, Cleveland, Ohio (10) (Voluntary)	121,856	112,556	9,300	0	446	1,034
76	Children's Hospital of the East Bay, Oakland, California (50) (Voluntary)	121,698	121,698	0	0	142	334
77	Long Island Jewish Hospital, New Hyde Park, New York (10) (Voluntary)	121,657	115,177	6,480	0	258	662
78	*Medfield State Hospital, Medfield, Massachusetts (22) (State) [9]	119,521	94,561	24,960	0	1,385	661
79	*Cleveland Psychiatric Institute and Hospital, Cleveland, Ohio (22) (State) [10]	119,380	119,380	0	0	300	417
80	Jewish National Home for Asthmatic Children, Denver, Colorado (59) (Voluntary)	117,392	117,392	0	0	151	134
81	National Jewish Hospital, Denver, Colorado (33) (Voluntary)	117,283	117,283	0	0	325	535

Rank	Hospital	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	1962 hospital data: Beds	1962 hospital data: Personnel
82	Montefiore Hospital and Institute of Research, Pittsburgh, Pennsylvania (10) (Voluntary)	$ 116,729	$ 116,729	$ 0	$ 0	321	666
83	*Public Health Service, Staten Island Hospital, Staten Island, New York (10) (Federal)	115,645	115,645	0	0	814	1,057
84	New England Deaconess Hospital, Boston, Massachusetts (10) (Voluntary)	113,532	23,820	89,712	0	373	917
85	Penrose (Glockner) Hospital, Colorado Springs, Colorado (10) (Voluntary)	112,856	0	112,856	0	300	580
86	*Illinois State Psychiatric Institute Medical Research, Chicago, Illinois (22) (State)	111,907	24,150	87,757	0	350	582
87	Millard Fillmore Hospital, Buffalo, New York (10) (Voluntary)	111,615	111,615	0	0	517	1,061
88	*Los Angeles County General Hospital, Los Angeles, California (10) (County)	110,925	110,925	0	0	3,292	4,772
89	*Henry R. Landis State Hospital, Philadelphia, Pennsylvania (33) (State)	110,915	0	0	110,915	180	231
90	St. Vincent Charity Hospital, Cleveland, Ohio (10) (Voluntary)	110,257	93,757	16,500	0	368	828
91	Roosevelt Hospital, New York, New York (10) (Voluntary)	109,795	69,134	40,661	0	449	1,170
92	Eye and Ear Hospital of Pittsburgh, Pittsburgh, Pennsylvania (45) (Voluntary)	108,767	0	0	108,767	137	201
93	*Rancho Los Amigos Hospital, Downey, California (48) (County)	104,418	104,418	0	0	2,190	1,832
94	*Mental Health Institutes, Cherokee, Iowa (22) (State)	101,701	0	101,701	0	1,046	503

* Indicates public control of hospital.

Source: American Hospital Association. Hospitals, Guide Issue. Vol. 36. Part 2. August 1, 1962. Chicago, Illinois.

1/ Number in parenthesis following name and address of hospital is the "Service" code assigned by the American Hospital Association.
Service** - Key to Numerical Codes and Definitions from Hospitals, Guide Issue.

10 - General
11 - Hospital department of an institution (prison hospital, college infirmary, etc.)
22 - Psychiatric
33 - Tuberculosis
44 - Maternity
45 - Eye, ear, nose and throat
47 - Orthopedic
48 - Chronic disease and/or convalescent
49 - Other specialty
5- - Children's
62 - Institution for mental retardation
72 - Epilepsy
82 - Alcoholic and/or addictive diseases
RR - Inpatient care institution other than hospital

** When a hospital restricts its service to a specialty not included in this coding, the specialty is indicated in parenthesis, following the name of the hospital.
When service is restricted to children, the first digit will always be "5", indicating "children's hospital", and the second digit will be the second digit usually used in the above list to indicate kind of service, i.e., children's general -50, children's psychiatric-52, and so forth.

2/ Including San Francisco Institute of Medical Science
3/ Some grants conducted on cooperative arrangement with Western Reserve University.
4/ Including Eastern Mental Health Center.
5/ Including Children's Hospital Research Foundation.
6/ Including Elizabeth Gamble Deaconess Home Association.
7/ Including Psychiatric and Psychosomatic Research Institute.
8/ Including A. Ochsner Medical Foundation.
9/ Including Medfield Foundation, Inc.
10/ Including Psychiatric Research Foundation.
11/ Including Arthur P. Noyes Foundation.

Appendix Table 57

19 Leading Governmental Agencies, Each in Receipt of $100,000 or More in NIH Extramural Funds Under Four Programs, in Descending Order of NIH Awards Funded to All Units of the Institution, United States. Fiscal Year 1962

Rank	Governmental Agency	NIH funds under 4 programs, Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Authority
1	*Health Research Inc., State Health Department, Albany and Buffalo, New York	$2,540,280	$2,531,881	$ 8,399	$ 0	State
2	*California State Department of Public Health, Berkeley, California	2,060,578	762,324	118,254	1,180,000	State
3	*Public Health Research Institute of the City of New York New York, New York	1,020,533	973,328	47,205	0	City
4	*New York State Research Foundation for Mental Hygiene, Middletown, New York	873,192	793,179	80,013	0	State
5	*Pan American Sanitary Bureau, Washington, District of Columbia	736,909	736,909	0	0	International
6	*Public Health Service, National Institutes of Health, Bethesda, Maryland 1/	457,285	0	457,285	0	Federal
7	*New Jersey State Department of Health, Trenton, New Jersey	346,085	114,310	25,250	206,525	State
8	*Mississippi State Building Commission, Jackson, Mississippi	306,500	0	0	306,500	State
9	*Florida State Board of Health, Jacksonville, Florida	297,444	254,503	42,941	0	State
10	*Massachusetts Mental Health Research Corporation, Boston, Massachusetts	268,462	267,962	500	0	State
11	*New Jersey State Department of Institutions and Agencies, Trenton, New Jersey	245,083	245,083	0	0	State
12	*Smithsonian Institution, Washington, District of Columbia	239,947	239,947	0	0	Federal
13	*Chicago Board of Health Chicago, Illinois	232,033	223,935	8,098	0	City
14	*Western Interstate Commission for Higher Education, Boulder, Colorado	209,005	168,322	40,683	0	Interstate
15	*New Mexico Department of Public Health, Santa Fe, New Mexico	162,322	162,322	0	0	State
16	*Oak Ridge National Laboratory, Oak Ridge, Tennessee	154,407	0	154,407	0	Federal
17	*California State Department of Mental Hygiene, Sacramento, California	140,472	72,972	67,500	0	State
18	*Medical and Health Research Association of New York City, Inc., New York, New York	116,051	116,051	0	0	City
19	*Michigan Department of Health, Lansing, Michigan	108,018	108,018	0	0	State

* Control of all sponsoring institutions on this list is public.

1/ Denotes awards of only Fellowship or Traineeship.

Note: Excludes all institutions of higher education and hospitals under public auspices.

Appendix Table 58

67 Leading Sponsoring Research Institutes and "Other" Institutions, Each in Receipt of $100,000 or More in NIH Extramural Funds Under Four Programs, in Descending Order of NIH Awards Funded to All Units of the Institution. United States. Fiscal Year 1962

Rank	Institution	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Tentative description
1	Sloan-Kettering Institute for Cancer Research, New York City, New York	$ 2,393,320	$ 2,156,546	$ 236,774	$ 0	Medical research institute or laboratory
2	Mayo Foundation, Association and Clinic, Rochester, Minnesota	1,890,954	1,508,253	382,701	0	Medical research institute or laboratory
3	Medical Research Foundation of Oregon, Inc., Portland, Oregon	1,740,827	1,740,827	0	0	Medical research institute or laboratory
4	Children's Cancer Research Foundation, Inc., Boston, Massachusetts	1,523,199	1,522,699	500	0	Medical research institute or laboratory
5	Mobilization for Youth, New York City, New York	1,282,243	1,282,243	0	0	Social and health agency
6	Worcester Foundation for Experimental Biology, Inc., Shrewsbury, Massachusetts	1,166,020	1,066,471	99,549	0	Medical research institute or laboratory
7	Kaiser Foundation Research Institute, Oakland, California	1,072,290	1,072,290	0	0	Foundation
8	Oklahoma Medical Research Institute, Oklahoma City, Oklahoma	1,071,656	568,713	39,258	463,685	Medical research institute or laboratory
9	Institute for Cancer Research, Philadelphia, Pennsylvania	968,478	954,664	13,814	0	Medical research institute or laboratory
10	Roscoe B. Jackson Memorial Laboratory, (now known as Jackson Laboratory) Bar Harbor, Maine	943,801	824,897	118,904	0	Medical research institute or laboratory
11	Marine Biological Laboratory, Woods Hole, Massachusetts	684,280	521,916	162,364	0	Medical research institute or laboratory
12	Retina Foundation, Boston, Massachusetts	646,440	599,315	10,846	36,279	Organization or association
13	Cleveland Clinic Foundation, Cleveland, Ohio	575,913	575,913	0	0	Outpatient mental health
14	Menninger Foundation, Topeka, Kansas	569,881	226,583	343,298	0	Medical research institute or laboratory
15	Trudeau Saranac Institute, Inc., Trudeau, New York	518,636	31,136	0	487,500	Medical research institute or laboratory
16	Texas Medical Center, Inc., Houston, Texas	506,066	52,074	0	453,992	Medical research institute or laboratory
17	Palo Alto Medical Research Foundation, Palo Alto, California	501,248	478,524	22,724	0	Medical research institute or laboratory
18	Central Institute for the Deaf, St. Louis, Missouri	471,671	443,431	28,240	0	Medical research institute or laboratory
19	Pacific Northwest Research Foundation, Inc., Seattle, Washington	429,856	163,536	0	266,320	Medical research institute or laboratory
20	Mallory Institute of Pathology, Boston, Massachusetts	417,001	345,843	71,158	0	Medical research institute or laboratory
21	Eastman Dental Dispensary, Rochester, New York	399,067	351,747	47,320	0	Outpatient clinical medicine
22	Federation of American Societies for Experimental Biology, Bethesda, Maryland	382,513	382,513	0	0	Scientific or technical society
23	National Academy of Sciences-National Research Council, Washington, D. C.	379,180	371,620	7,560	0	Scientific or technical society
24	Protein Foundation, Inc., Cambridge, Massachusetts	341,801	341,801	0	0	Medical research institute or laboratory
25	Fels Research Institute, Yellow Springs, Ohio	320,226	313,532	6,694	0	Medical research institute or laboratory
26	Leonard Wood Memorial for the Eradication of Leprosy, New York City, New York	314,708	245,671	69,037	0	Organization or association

Rank	Institution	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Tentative description
27	Institute for Advancement of Medical Communication, New York City, New York	$ 307,800	$ 248,233	$ 59,567	$ 0	Organization or association
28	American Public Health Association, New York City, New York	294,518	294,518	0	0	Scientific or technical society
29	Forsyth Dental Infirmary for Children, Boston, Massachusetts	286,732	286,732	0	0	Outpatient clinical medicine
30	National Opinion Research Center, Chicago, Illinois	286,280	286,280	0	0	Organization or association
31	Cooperative Commission on the Study of Alcoholism, Berkeley, California	267,628	267,628	0	0	Social and health agency
32	Child Research Center of Michigan, Detroit, Michigan	261,912	261,912	0	0	Medical research institute or laboratory
33	Center for Advanced Study in Behavioral Sciences, Inc., Palo Alto, California	252,749	109,480	143,269	0	Medical research institute or laboratory
34	Greater Kansas City Mental Health Foundation, Kansas City, Missouri	229,616	127,296	102,320	0	Outpatient mental health
35	James F. Mitchell Foundation for Medical Education and Research, Washington, D. C.	225,708	225,708	0	0	Medical research institute or laboratory
36	Jewish Board of Guardians, New York City, New York	211,840	153,082	58,758	0	Organization or association
37	Southwest Foundation for Research and Education, San Antonio, Texas	210,048	210,048	0	0	Medical research institute or laboratory
38	Long Island Biological Association, Cold Spring Harbor, New York	197,462	131,324	66,138	0	Scientific or technical society
39	Institute for Study of Crime and Delinquency, Sacramento, California	189,748	189,748	0	0	Medical research institute or laboratory
40	National Council of Juvenile Court Judges, Memphis, Tennessee	185,863	185,863	0	0	Social and health agency
41	Stanford Research Institute, Menlo Park, California	184,417	184,417	0	0	Industrial research laboratory (non-profit)
42	Zoological Society of Philadelphia, Philadelphia, Pennsylvania	167,059	157,459	9,600	0	Organization or association
43	Barrow Neurological Institute, Phoenix, Arizona	159,800	159,800	0	0	Medical research institute or laboratory
44	Council of Social Agencies of Greater New Haven, Inc., New Haven, Connecticut	159,215	159,215	0	0	Social and health agency
45	Bio-Research Institute, Inc., Cambridge, Massachusetts	157,145	157,145	0	0	Medical research institute or laboratory
46	Lovelace Foundation for Medical Education and Research, Albuquerque, New Mexico	151,851	151,851	0	0	Medical research institute or laboratory
47	Gorgas Memorial Institute of Tropical and Preventive Medicine, Washington, D. C.	149,801	149,801	0	0	Medical research institute or laboratory
48	Friends of Psychiatric Research, Inc., Baltimore, Maryland	148,319	148,319	0	0	Medical research institute or laboratory
49	Blood Grouping Laboratory, Inc., Boston, Massachusetts	145,054	145,054	0	0	Medical research institute or laboratory
50	Institute for Muscle Disease, Inc., New York City, New York	143,069	143,069	0	0	Medical research institute or laboratory
51	South Jersey Medical Research Foundation, Camden, New Jersey	142,052	142,052	0	0	Medical research institute or laboratory
52	Haskins Laboratories, Inc., New York City, New York	141,997	141,997	0	0	Medical research institute or laboratory
53	Detroit Institute of Cancer Research, Inc., Detroit, Michigan	141,601	141,601	0	0	Medical research institute or laboratory
54	Cancer Research, Inc., Philadelphia, Pennsylvania	137,830	137,830	0	0	Organization or association

Rank	Institution	NIH funds under 4 programs Fiscal Year 1962	NIH funds under research grants Fiscal Year 1962	NIH funds for career development Fiscal Year 1962	NIH funds for construction Fiscal Year 1962	Tentative description
55	Philadelphia Child Guidance Clinic, Philadelphia, Pennsylvania	$ 131,667	$ 0	$ 131,667	$ 0	Outpatient mental health
56	American Institute of Biological Sciences, Washington, D. C.	128,219	94,611	33,608	0	Scientific or technical society
57	Germfree Life Research Center, Tampa, Florida	126,828	126,828	0	0	Medical research institute or laboratory
58	William Alanson White Institute of Psychiatry, New York City, New York	123,305	113,305	10,000	0	Outpatient mental health
59	Health and Welfare Council of National Capital Area, Washington, D. C.	119,190	119,190	0	0	Social and health agency
60	Research Institute for Advanced Studies, Baltimore, Maryland	118,800	115,302	3,498	0	Medical research institute or laboratory
61	Southeast Wyoming Mental Health Center, Cheyenne, Wyoming	117,979	117,979	0	0	Outpatient mental health
62	American Psychological Association, Washington, D. C.	117,155	40,500	76,655	0	Organization or association
63	National League for Nursing, Inc., New York City, New York	114,989	114,989	0	0	Scientific or technical society
64	American Dental Association, Chicago, Illinois	111,232	111,232	0	0	Scientific or technical society
65	American Foundation for Tropical Medicine, Inc., New York, New York	110,171	110,171	0	0	Medical research institute or laboratory
66	Visiting Nurse Association, Hartford, Connecticut	108,713	108,713	0	0	Organization or association
67	Jewish Vocational Service, Milwaukee, Wisconsin	100,997	100,997	0	0	Social and health agency

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Appendix Table 59

NIH Extramural Funds to Government Agencies, by Program. Fiscal Years 1954, 1959, 1960, 1961 and 1962. United States and Possessions

State	1962			1961			1960			1959			1954		
	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction
Total (in thousands)	$9,875.9	$1,314.5	$1,693.0	$10,089.0	$961.8	$2,288.4	$6,214.6	$911.7	$389.7	$5,041.9	$415.4	$100.0	$524.6	$101.7	0
Alabama	45.7	0	0	0	0	0	6.6	0	0	6.7	0	0	0	0	0
Alaska	65.0	0	0	0	0	0	54.4	0	0	51.5	0	0	0	0	0
Arizona	37.9	0	0	4.4	0	0	0	0	0	8.8	0	0	1.7	0	0
Arkansas	0	0	0	2.6	0	0	2.6	0	0	2.6	0	0	0	0	0
California	1,090.8	188.3	1,180.0	1,132.8	120.3	0	504.1	182.1	0	577.9	51.9	0	220.2	0	0
Colorado	260.8	40.7	0	111.6	22.8	0	49.4	22.8	0	99.8	0	0	13.9	0	0
Connecticut	149.7	0	0	101.9	0	0	169.9	33.0	0	174.5	18.4	0	0	0	0
Delaware	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
District of Columbia	976.9	59.3	0	819.5	70.5	0	473.2	56.1	0	460.4	26.0	0	24.9	8.6	0
Florida	262.3	42.9	0	266.8	33.1	0	214.0	23.2	0	214.4	0	0	0	0	0
Georgia	210.8	8.6	0	293.6	5.6	0	203.3	0	0	180.1	0	0	0	0	0
Hawaii	35.6	0	0	60.5	0	0	96.4	0	0	26.7	0	0	6.4	0	0
Idaho	4.7	0	0	18.2	0	0	21.8	0	0	24.8	0	0	0	0	0
Illinois	262.2	8.1	0	100.0	6.0	0	69.4	6.3	0	76.2	0	0	0	0	0
Indiana	0	0	0	7.0	0	0	5.5	0	0	6.0	0	0	0	0	0
Iowa	15.1	0	0	59.7	0	0	35.8	0	0	13.5	0	0	0	0	0
Kansas	0	0	0	1.3	0	0	0	0	0	0	0	0	0	0	0
Kentucky	0	0	0	0	0	0	0	0	0	0	0	100.0	0	0	0
Louisiana	29.0	14.0	0	31.0	0	0	53.8	0	0	17.6	0	0	0	8.6	0
Maine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maryland	46.7	466.3	0	54.3	322.2	0	59.9	258.4	0	15.0	178.8	0	0	39.5	0
Massachusetts	352.6	84.7	0	824.7	98.3	0	469.4	58.1	0	322.1	32.2	0	0	3.6	0
Michigan	144.6	0	0	242.3	0	0	128.3	0	0	173.4	0	0	19.5	1.1	0
Minnesota	113.5	0	0	104.6	40.5	0	144.6	74.1	0	103.3	0	0	11.4	0	0
Mississippi	35.1	0	306.5	16.4	0	1,462.5	27.9	0	0	29.1	0	0	0	0	0
Missouri	16.7	0	0	33.8	0	0	33.2	0	0	0	0	0	0	0	0
Montana	105.5	0	0	102.3	0	0	65.2	0	0	0	0	0	0	0	0
Nebraska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	46.1	0	0	1.9	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Jersey	359.4	25.2	206.5	230.8	0	0	24.4	0	0	9.2	0	0	0	0	0
New Mexico	162.3	0	0	133.3	0	0	58.9	0	0	140.2	0	0	0	0	0
New York	4,487.9	170.6	0	4,888.7	132.2	550.0	2,879.4	142.3	299.7	2,011.9	57.3	0	154.2	29.5	0
North Carolina	37.4	42.8	0	33.6	16.7	0	76.6	17.8	0	2.4	8.9	0	0	5.4	0
North Dakota	2.4	0	0	2.7	0	0	0	0	0	0	0	0	0	0	0
Ohio	128.4	8.5	0	67.6	0	0	39.3	0	90.0	8.9	0	0	0	0	0
Oklahoma	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oregon	28.1	0	0	18.1	0	0	19.1	0	0	0	0	0	0	0	0
Pennsylvania	14.7	0	0	13.1	0	0	0	0	0	0	0	0	0	0	0
Rhode Island	34.2	0	0	27.0	0	0	25.3	0	0	132.9	0	0	0	0	0
South Carolina	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Dakota	0	0	0	0	0	0	7.9	0	0	7.9	0	0	0	0	0
Tennessee	29.2	154.4	0	72.8	93.6	0	38.7	19.7	0	35.4	15.0	0	43.1	0	0
Texas	30.9	0	0	27.3	0	87.3	24.9	0	0	33.3	0	0	17.4	5.4	0
Utah	3.4	0	0	26.1	0	0	2.0	0	0	0	0	0	0	0	0
Vermont	9.0	0	0	53.5	0	0	18.1	0	0	27.1	0	0	0	0	0
Virginia	84.6	0	0	30.8	0	27.3	74.5	0	0	0	0	0	0	0	0
Washington	88.4	0	0	39.5	0	0	24.3	0	0	24.0	0	0	0	0	0
West Virginia	0	0	0	0	0	0	0	0	0	1.9	0	0	0	0	0
Wisconsin	31.6	0	0	32.6	0	161.3	12.4	17.7	0	12.4	26.9	0	1.0	0	0
Wyoming	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puerto Rico	31.3	0	0	0	0	0	0	0	0	0	0	0	11.0	0	0
Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Public Health Service Grants and Awards publications for each fiscal year.
Figures may not add to total due to rounding.

Appendix Table 60

NIH Extramural Funds to Hospitals, by Program. Fiscal Years 1954, 1959, 1960, 1961, and 1962. United States and Possessions

State	1962			1961			1960			1959			1954		
	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction
Total (in thousands)	$37,919.5	$10,908.7	$5,976.7	$29,045.7	$9,677.2	$6,584.2	$21,699.8	$6,115.3	$4,418.0	$15,172.7	$4,186.8	$4,901.2	$3,049.5	$798.5	0
Alabama	22.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	0	0	0	0	0	0	0	0	53.6	0	0	0	0	0	0
Arkansas	60.5	23.4	0	1.2	22.2	0	0	3.8	0	0	0	0	0	0	0
California	5,832.8	1,253.9	944.2	3,975.6	935.7	903.0	2,940.3	450.4	474.7	1,907.0	281.7	0	325.9	44.3	0
Colorado	279.3	116.8	0	281.6	33.4	4.3	167.4	15.4	0	90.6	8.7	79.0	21.1	7.7	0
Connecticut	391.5	208.0	0	413.7	303.7	19.1	95.0	163.6	7.3	120.1	101.7	132.4	22.2	8.4	0
Delaware	0	0	0	7.2	0	0	50.8	0	0	48.5	0	0	12.6	0	0
District of Columbia	334.6	239.6	0	285.8	263.0	0	177.5	171.6	25.0	163.2	140.4	5.4	72.9	11.1	0
Florida	314.8	97.0	0	181.6	62.1	0	177.1	4.8	126.5	106.4	0	0	10.4	3.6	0
Georgia	26.1	73.7	0	27.9	82.7	0	27.8	44.5	109.5	0	0	0	0	0	0
Hawaii	11.5	59.6	0	11.5	90.7	0	11.5	94.2	0	11.5	49.5	0	0	0	0
Idaho	25.0	0	0	22.4	0	0	20.0	0	0	20.0	0	0	9.6	0	0
Illinois	2,626.4	673.0	117.1	2,192.2	568.2	2,439.5	1,472.5	299.7	24.8	1,027.8	192.3	770.1	279.4	62.8	0
Indiana	102.7	0	0	127.8	0	0	49.8	0	0	13.3	0	0	0	0	0
Iowa	0	106.6	0	0	100.9	0	0	71.1	0	0	45.0	0	0	3.6	0
Kansas	5.3	16.1	0	8.2	15.4	0	8.6	18.3	0	60.8	9.2	0	7.8	5.3	0
Kentucky	63.8	0	0	16.9	0	0	4.7	0	0	9.5	11.4	0	0	0	0
Louisiana	659.2	4.9	0	716.0	4.5	0	388.5	15.4	0	383.3	21.7	0	62.6	3.6	0
Maine	43.8	63.2	0	48.9	75.4	0	72.2	6.6	0	8.6	8.2	0	0	0	0
Maryland	1,111.4	236.3	225.0	901.4	237.8	54.6	789.6	147.5	0	555.2	91.3	3.5	31.3	8.4	0
Massachusetts	10,194.4	3,220.3	0	8,146.4	3,169.9	823.8	6,250.3	2,387.8	595.4	4,269.9	1,933.4	479.4	1,061.6	320.7	0
Michigan	722.2	329.3	0	605.4	277.6	75.0	518.5	173.3	0	335.3	87.8	28.6	6.0	0	0
Minnesota	247.8	75.5	0	140.8	53.0	28.6	134.2	72.7	0	99.8	26.5	6.3	28.3	0	0
Mississippi	12.9	0	0	15.1	0	0	15.1	0	0	0	0	0	0	0	0
Missouri	153.1	64.5	0	259.2	24.0	15.5	178.1	4.8	205.6	84.8	29.2	0	35.2	36.6	0
Montana	34.7	0	0	57.0	0	0	36.5	0	0	36.5	0	0	0	0	0
Nebraska	18.8	0	0	23.4	0	0	0	0	0	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	14.8	0	0	14.8	0	0	17.1	0	0	49.0	0	0	36.0	0	0
New Jersey	237.7	45.8	0	232.9	73.5	0	160.8	.5	0	119.3	6.5	50.0	38.4	0	0
New Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New York	6,252.9	2,336.7	4,135.7	5,032.7	1,717.8	844.9	3,741.4	989.4	1,585.2	2,792.3	605.1	1,367.7	422.8	128.8	0
North Carolina	157.5	0	0	131.3	0	0	74.5	0	0	1.8	0	0	11.0	0	0
North Dakota	11.8	13.2	0	0	12.7	0	0	13.7	0	0	0	0	0	0	0
Ohio	2,840.7	147.7	224.4	1,336.3	76.8	831.8	855.2	58.9	765.9	597.2	67.5	1,450.6	135.8	18.9	0
Oklahoma	14.1	38.9	0	7.5	36.0	0	10.5	24.0	0	0	0	0	0	0	0
Oregon	113.0	37.7	0	96.0	21.6	0	55.0	4.2	0	41.4	0	24.3	0	0	0
Pennsylvania	4,365.0	1,059.5	219.7	3,185.2	1,110.0	521.0	2,645.3	722.3	376.4	1,869.7	384.7	380.8	366.8	124.5	0
Rhode Island	51.0	120.5	110.6	66.9	159.2	0	56.9	86.0	0	47.8	58.5	0	0	6.6	0
South Carolina	52.3	10.0	0	66.6	0	0	79.7	0	0	78.9	0	0	0	0	0
South Dakota	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	34.0	0	0	30.0	0	0	31.2	0	0	28.0	0	34.3	0	0	0
Texas	102.0	76.5	0	135.7	69.9	0	113.2	10.1	0	13.8	18.2	0	13.0	0	0
Utah	58.2	28.8	0	64.3	0	0	59.3	0	0	36.7	0	0	39.1	0	0
Vermont	15.4	0	0	15.4	0	0	15.4	0	0	0	0	9.1	0	0	0
Virginia	0	1.4	0	0	0	0	10.2	0	0	2.2	0	0	0	0	0
Washington	198.1	23.7	0	30.9	9.8	19.8	58.9	12.7	0	29.6	8.6	0	0	3.6	0
West Virginia	8.3	0	0	38.8	0	0	19.7	0	0	22.7	0	79.8	0	0	0
Wisconsin	55.9	0	0	57.0	0	3.3	33.5	0	0	42.2	0	0	0	0	0
Wyoming	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Puerto Rico	42.0	106.5	0	36.3	69.6	0	46.0	48.0	68.0	48.2	0	0	0	0	0
Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Public Health Service Grants and Awards publications for each fiscal year.

Figures may not add to total due to rounding.

Appendix Table 61

NIH Extramural Funds to Research Institutes and Other Institutions, by Program. Fiscal Years 1954, 1959, 1960, 1961, and 1962. United States and Possessions

State	1962			1961			1960			1959			1954		
	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction	Research grants	Career development	Construction
Total (in thousands)	$32,398.7	$3,775.2	$1,707.7	$26,623.6	$3,610.3	$619.3	$18,800.6	$2.237.7	$4,176.7	$13,601.3	$1,741.6	$1,031.8	$3,222.0	$581.8	0
Alabama	0	0	0	0	0	150.0	10.0	0	0	36.6	0	0	15.4	0	0
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	179.8	0	0	23.1	0	0	0	0	0	5.6	0	0	0	0	0
Arkansas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
California	3,122.4	312.6	0	2,300.4	362.2	0	1,350.8	215.7	336.5	536.0	136.4	10.7	39.1	13.1	0
Colorado	87.0	0	0	131.7	0	0	81.8	0	50.0	3.0	0	0	25.0	0	0
Connecticut	454.1	15.8	0	528.2	25.0	0	225.1	20.0	0	145.9	6.1	0	0	4.3	0
Delaware	26.7	0	0	34.6	0	0	45.2	0	0	30.0	0	0	0	0	0
District of Columbia	1,376.0	274.0	0	1,609.0	333.9	90.3	1,550.1	151.0	0	791.7	161.4	0	148.9	32.7	0
Florida	365.7	61.9	0	253.3	83.8	0	223.1	7.6	0	53.4	14.9	0	0	0	0
Georgia	0	0	0	1.1	0	0	0	0	0	0	0	0	16.6	51.3	0
Hawaii	.8	2.2	0	2.9	0	0	.3	0	0	0	0	0	0	0	0
Idaho	43.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Illinois	1,089.4	55.6	0	612.5	83.1	66.4	703.1	88.4	0	374.1	45.0	0	160.7	77.0	0
Indiana	19.0	0	0	21.3	0	0	18.1	0	0	16.8	0	0	15.0	0	0
Iowa	66.5	0	0	64.4	0	0	38.8	0	0	0	0	0	0	0	0
Kansas	246.2	353.4	0	304.9	216.4	0	213.5	181.2	53.1	160.8	99.1	0	56.4	48.0	0
Kentucky	92.1	0	0	88.8	0	0	34.6	0	0	15.0	0	0	0	0	0
Louisiana	2.0	0	0	15.0	0	0	1.6	0	0	7.9	0	0	12.2	0	0
Maine	824.9	118.9	0	671.6	117.3	10.4	599.3	128.5	0	497.0	158.3	37.2	227.5	5.2	0
Maryland	838.9	22.2	0	435.1	52.4	0	470.1	20.0	0	210.8	9.4	0	80.0	3.2	0
Massachusetts	5,512.9	524.0	36.3	4,079.4	395.1	0	3,250.6	359.9	356.4	3,210.5	237.9	831.9	737.7	132.0	0
Michigan	624.7	12.5	0	452.5	76.0	0	387.0	0	0	327.6	0	0	47.1	0	0
Minnesota	1,631.6	462.9	0	996.5	340.4	0	996.5	233.0	108.0	759.3	134.6	16.6	0	7.7	0
Mississippi	0	0	0	0	0	0	2.0	0	0	0	0	0	0	0	0
Missouri	714.4	130.6	0	625.8	128.9	0	302.8	41.7	0	268.1	41.8	0	113.8	0	0
Montana	23.7	0	0	27.1	0	0	13.7	0	0	19.7	0	0	38.8	0	0
Nebraska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	0	0	0	17.0	0	0	23.0	0	0	.5	0	0	0	0	0
New Jersey	320.9	74.6	0	315.1	6.7	0	279.6	3.8	0	168.6	6.9	5.0	0	0	0
New Mexico	175.1	0	0	44.8	0	0	33.4	0	0	50.6	1.1	0	14.3	0	0
New York	7,572.8	772.4	487.4	7,085.4	701.2	269.6	4,650.2	443.6	659.6	3,659.8	388.8	105.3	1,167.6	147.8	0
North Carolina	58.7	60.8	0	86.4	10.7	0	31.0	0	0	27.0	0	0	7.5	4.0	0
North Dakota	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ohio	1,317.6	31.2	0	801.4	77.1	0	736.8	54.5	118.0	533.3	48.0	0	181.1	3.6	0
Oklahoma	572.0	39.3	463.7	487.2	107.0	0	319.4	21.3	0	311.3	0	0	0	0	0
Oregon	1,793.3	0	0	1,996.0	40.1	0	38.5	2.3	0	19.7	5.0	25.0	0	0	0
Pennsylvania	1,958.6	321.9	0	1,494.7	364.1	32.6	1,242.5	209.8	0	645.1	206.8	0	63.2	48.9	0
Rhode Island	7.5	24.0	0	0	17.2	0	126.1	0	0	111.1	0	0	16.5	0	0
South Carolina	20.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Dakota	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	225.6	33.3	0	82.7	10.0	0	18.4	23.6	0	0	15.6	0	0	0	0
Texas	408.5	0	454.0	447.7	0	0	397.5	0	2,495.1	312.0	0	0	30.6	0	0
Utah	0	0	0	30.1	0	0	116.5	0	0	49.6	0	0	0	0	0
Vermont	23.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	9.6	0	0	21.0	0	0	21.1	0	0	27.2	0	0	7.0	0	0
Washington	165.0	36.9	266.3	199.7	61.7	0	133.8	31.7	0	150.6	24.6	0	0	3.0	0
West Virginia	0	0	0	7.0	0	0	10.7	0	0	12.9	0	0	0	0	0
Wisconsin	213.3	9.7	0	134.6	0	0	101.9	0	0	50.0	0	0	0	0	0
Wyoming	118.0	0	0	0	0	0	0	0	0	2.3	0	0	0	0	0
Puerto Rico	0	0	0	0	0	0	2.0	0	0	0	0	0	0	0	0
Virgin Islands	93.4	24.5	0	93.9	0	0	0	0	0	0	0	0	0	0	0

Source: Public Health Service Grants and Awards publications for each fiscal year.

Figures may not add to total due to rounding.

Appendix Table 63

Number of Institutions of Higher Education in the United States, by Fall 1962 Enrollment, and Number of These Institutions Receiving NIH Extramural Awards Under Four Programs, Fiscal Years 1954, 1959 and 1962 1/

Enrollment fall, 1962	Number institutions of higher education in U.S., 1962 (1)	Fiscal year 1962		Fiscal year 1959		Fiscal year 1954	
		Number of institutions with NIH awards (2)	Percent of 1962 total (2)/(1)	Number of institutions with NIH awards (3)	Percent of 1962 total (3)/(1)	Number of institutions with NIH awards (4)	Percent of 1962 total (4)/(1)
All institutions	2,043	372	18.2	302	14.8	174	8.5
Under 200 students in 1962	326	5	1.5	3	.9	1	.3
200 - 499	444	23	5.2	16	3.6	14	3.2
500 - 999	461	48	10.4	35	7.6	6	1.3
1,000 - 2,499	427	98	23.0	68	15.9	25	5.9
2,500 - 4,999	181	53	29.3	46	25.4	22	12.2
5,000 - 9,999	117	67	57.3	58	49.6	40	34.2
10,000 or more students	87	78	89.7	76	87.4	66	75.9

1/ Count follows method utilized by Office of Education in its official publications. A State system including many separate campuses is considered "one" unit

Appendix Table 64

Number of U.S. Institutions of Higher Education Receiving Awards and Funds Awarded Under Four NIH Extramural Programs by Fall 1962 Enrollment at Each Institution 1/
Fiscal Years 1954, 1959 and 1962

Enrollment fall, 1962	Fiscal year 1962		Fiscal year 1959		Fiscal year 1954	
	Number	Percent	Number	Percent	Number	Percent
	Institutions of Higher Education Receiving Awards Under Four NIH Extramural Programs					
All institutions	372	100.0	302	100.0	174	100.0
Under 2,500 students in 1962	174	46.8	122	40.4	46	26.4
2,500 or more students	198	53.2	180	59.6	128	73.6
	Funds Awarded to These Institutions Under Four NIH Extramural Programs					
All institutions	$431,899,036 2/	100.0	$183,414,597 3/	100.0	$35,227,981 4/	100.0
Under 2,500 students in 1962	28,784,345	6.7	12,813,100	7.0	2,415,637	6.9
2,500 or more students	403,114,691	93 3	170,601,497	93 0	32,812,344	93.1

1/ Count follows method utilized by Office of Education in its official publications.

2/ Awards by program, fiscal year 1962:
- $278,268,870 research grants
- 27,382,310 health research facility (construction)
- 101,424,183 training grants
- 24,823,673 full and part time fellowships, traineeships, and research career awards

3/ Awards by program, fiscal year 1959:
- $104,403,665 research grants
- 25,538,891 health research facility (contruction)
- 43,199,231 training grants
- 10,272,810 full and part time fellowships; traineeships

4/ Awards by program, fiscal year 1954:
- $24,037,435 research grants (and field investigations)
- 11,190,546 fellowships, teaching, training grants and traineeships

Sources: DHEW. OE. Opening (Fall) Enrollment in Higher Education, 1962: Institutional Data. OE-54003-62
DHEW. OE. Digest of Educational Statistics, 1963 edition. OE-10024-63. Table 60
DHEW. OE. Educational Directory 1961-1962. Part 3. Higher Education. OE-50000-62.

Appendix Table 65

Distribution of NIH Research Contract Funds to Each of Four Types of Sponsoring Institution, by Geographic Division. United States. Fiscal Year 1964

Location	All contract funds	Institution of higher education 1/	Hospital	Government 2/	Research institute and other
Total dollars	$ 42,399,416	$ 5,851,348	$ 774,947	$ 402,729	$ 35,370,392
Total percent	100.0	100.0	100.0	100.0	100.0
Geographic location					
New England	10.9	6.0	16.7	16.5	11.5
Middle Atlantic	27.9	19.7	31.4	3.9	29.5
East North Central	12.1	8.9	11.4	8.7	12.7
West North Central	4.1	14.6	.5	1.9	2.4
South Atlantic	26.4	17.9	5.3	16.7	28.3
East South Central	5.7	.8	0	1.5	6.6
West South Central	2.3	12.8	2.4	.9	.7
Mountain	1.0	6.3	.5	1.9	.2
Pacific	9.6	13.0	31.8	48.0	8.1
NEW ENGLAND	10.9	6.0	16.7	16.5	11.5
Maine	.5	0	0	0	.6
New Hampshire	0	0	0	0	0
Vermont	0.0	0	0	1.4	0
Massachusetts	10.1	5.6	16.7	0	10.8
Rhode Island	.1	0	0	0	.1
Connecticut	.2	.4	0	15.1	0
MIDDLE ATLANTIC	27.9	19.7	31.4	3.9	29.5
New York	16.3	11.7	6.6	0	17.5
New Jersey	6.5	.7	0	2.7	7.6
Pennsylvania	5.1	7.3	24.8	1.2	4.4
EAST NORTH CENTRAL	12.1	8.9	11.4	8.7	12.7
Ohio	1.9	1.6	0	0	2.0
Indiana	1.1	.5	0	0	1.3
Illinois	3.8	3.0	11.4	0	3.8
Michigan	2.7	.8	0	7.5	3.0
Wisconsin	2.6	3.0	0	1.2	2.6
WEST NORTH CENTRAL	4.1	14.6	.5	1.9	2.4
Minnesota	.8	0	0	0	.9
Iowa	.1	.7	0	0	0
Missouri	1.6	5.6	0	1.1	1.0
North Dakota	0	0	0	0	0
South Dakota	0.0	0	0	.8	0
Nebraska	.3	0	0	0	.3
Kansas	1.3	8.3	.5	0	.2
SOUTH ATLANTIC	26.4	17.9	5.3	16.7	28.3
Delaware	.1	0	0	0	.1
Maryland	13.2	4.2	0	7.9	15.0
District of Columbia	5.0	7.7	0	3.2	4.7
Virginia	6.2	1.0	3.6	1.3	7.2
West Virginia	.1	.6	0	1.1	0
North Carolina	.8	.8	0	2.0	.8
South Carolina	0	0	0	0	0
Georgia	.1	.3	0	0	.1
Florida	.9	3.3	1.7	1.2	.4
EAST SOUTH CENTRAL	5.7	.8	0	1.5	6.6
Kentucky	.2	.3	0	0	.1
Tennessee	.1	.5	0	0	0
Alabama	5.4	0	0	1.5	6.5
Mississippi	0	0	0	0	0
WEST SOUTH CENTRAL	2.3	12.8	2.4	.9	.7
Arkansas	0	0	0	0	0
Louisiana	.5	3.0	2.4	.9	.1
Oklahoma	0.0	.3	0	0	0
Texas	1.8	9.5	0	0	.6
MOUNTAIN	1.0	6.3	.5	1.9	.2
Montana	0	0	0	0	0
Idaho	0.0	0	0	0	0.0
Wyoming	0.0	0	.5	0	0
Colorado	.3	1.4	0	0	.2
New Mexico	0.0	0	0	.7	0
Arizona	.2	1.2	0	0	0
Utah	.5	3.6	0	1.2	0.0
Nevada	0.0	.1	0	0	0
PACIFIC	9.6	13.0	31.8	48.0	8.1
Washington	.2	1.4	0	.4	0.0
Oregon	.4	.8	0	2.2	.3
California	8.3	8.5	14.9	36.3	7.8
Alaska	0	0	0	0	0
Hawaii	.7	2.3	16.9	9.1	0

1/ Including any hospital owned by a parent institution in this group.
2/ Excluding any institution of higher education or hospital under public control.

Source: NIH Research Contracts Quarterly Report: Rice, July 1963 - June 1964.

Appendix Table 66

Distribution of NIH Research Grant Funds, Fiscal Year 1964, and
Distribution of NIH Health Research Facility Funds, July 1956 through December 31, 1964
by Professional Orientation of Grantee Unit

Professional Orientation of Grantee Unit	Research grant funds (excluding general research support) fiscal year 1964		Health research facilities funds (construction) July 1956 through December 31, 1964	
	Amount (in millions)	Percent	Amount (in millions)	Percent
Total	$462.9	100.0 1/	$320.0	100.0
Medical school (including osteopathy)	224.5	48.5	166.4	52.0
Health related school (non-medical)	17.6	3.8	19.8	6.2
Other higher education	90.9	19.6	71.1	22.2
Hospital	73.8	15.9	39.8	12.4
Other	56.1	12.1	22.9	7.2

1/ Does not add to 100.0 because of rounding.

Sources: Research grant funds -- NIH. Basic Data Relating to the National Institutes of Health, 1965, p.23.
Note: Data derived from Science Information Exchange tabulations. System of coding differs somewhat from that utilized by DRG.
Health research facilities funds -- NIH. DRFR. 9th Annual Report, Appendix VII.

Appendix Table 67

Distribution of NIH Training Grants and Funds Awarded, by Professional Orientation of Grantee Unit, for Each Institute/Division [1]. Graduate and Undergraduate. United States and Possessions. Fiscal Year 1962

Professional orientation of grantee unit	All Institutes	Training grant awards by Institute								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Total	3,684	166	329	0	340	155	674	374	1,397	249
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Higher Education [2]	85.3	92.2	86.6	0	82.9	96.1	95.7	85.8	77.9	86.7
Medical [3]	53.3	60.3	85.7	0	64.4	.6	57.1	75.9	34.6	82.7
Dentistry	5.1	0	0	0	12.9	91.6	.3	0	0	0
Health Related [4]	7.8	12.1	.9	0	2.1	.6	9.4	4.3	12.7	0
Social Welfare [5]	5.5	0	0	0	0	0	0	.5	14.4	0
All other	13.6	19.8	0	0	3.5	3.3	28.9	5.1	16.2	4.0
Hospital [6]	10.2	5.4	12.5	0	13.8	1.3	2.1	12.8	14.2	12.1
General	6.3	3.6	9.4	0	10.0	1.3	2.1	11.2	6.4	8.1
Psychiatric	2.6	0	0	0	0	0	0	0	7.1	.8
All other	1.3	1.8	3.1	0	3.8	0	0	1.6	.7	3.2
Government [7]	.5	1.2	0	0	1.5	0	.4	.3	.9	0
State/Local [8]	.5	1.2	0	0	1.5	0	.4	.3	.8	0
All other	0	0	0	0	0	0	0	0	.1	0
Research Institute/other	4.0	1.2	.9	0	1.8	2.6	1.8	1.1	7.0	1.2

Professional orientation of grantee unit	All Institutes	Training grant funds by Institute (in thousands)								
		NIAID	NIAMD	NICHD	NCI	NIDR	NIGMS	NHI	NIMH	NINDB
Total	$115,477	$5,514	$9,508	0	$7,881	$4,015	$29,865	$11,433	$39,425	$7,836
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Higher Education [2]	88.4	92.4	86.5	0	81.9	97.8	96.4	86.8	82.9	88.9
Medical [3]	56.4	65.1	85.8	0	68.9	.9	55.7	76.8	40.0	84.8
Dentistry	3.4	0	0	0	2.8	90.1	.3	0	0	0
Health Related [4]	7.6	12.6	.7	0	2.6	1.3	9.1	4.0	11.7	0
Social Welfare [5]	4.9	0	0	0	0	0	0	.3	14.2	0
All other	16.1	14.7	0	0	7.6	5.5	31.3	5.7	17.0	4.1
Hospital [6]	8.4	4.5	12.5	0	12.1	.7	1.4	11.9	11.7	10.1
General	5.1	3.3	10.0	0	5.3	.7	1.4	10.6	5.3	6.2
Psychiatric	1.9	0	0	0	0	0	0	0	5.7	.2
All other	1.4	1.2	2.5	0	6.8	0	0	1.3	.7	3.7
Government [7]	.5	.9	0	0	2.4	0	.7	.4	.8	0
State/Local [8]	.5	.9	0	0	2.4	0	.7	.4	.8	0
All other	0.0	0	0	0	0	0	0	0	0.0	0
Research Institute/other	2.9	2.2	1.0	0	3.6	1.5	1.5	.9	4.6	1.0

1/ Supplemental grants included in count of grants.
2/ Including any hospital, research institute, or other health related facility owned by a parent institution is this group.
3/ Including schools of osteopathy.
4/ Including nursing, public health, pharmacy, veterinary medicine.
5/ Including social welfare, social work/social service.
6/ Including out-patient facilities.
7/ Excluding any institution of higher education or hospitals under public control.
8/ State and local department of health, mental hygiene, health and welfare, etc.

Sources: DRG. SAB. Computer printout.

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